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PROCEEDINGS**

**IMPLICATIONS OF
ARTIFICIAL
INTELLIGENCE
FOR
RELIGION
AND
PSYCHICAL
RESEARCH**

**The Academy of Religion and Psychical Research
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IMPLICATIONS OF ARTIFICIAL INTELLIGENCE
FOR RELIGION AND PSYCHICAL RESEARCH

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THE BRIDGE BETWEEN ARTIFICIAL INTELLIGENCE
AND THE HUMAN PSYCHE

Abdul S. Hassam

Artificial Intelligence is about how symbols representing things in the world can be integrated into machines that mimic the language of the mind, the process we call thinking. This paper explores the broad field of artificial intelligence in relation to its social, philosophical and psychical implications. Against the backdrop of a new integrated paradigm of the "hardware" of science and technology, and the software of philosophy and psychology, and the "transcendent" ware of mysticism and spirituality, the field is broadly explored.

PREAMBLE. As we approach the third millennium, one of the mounting excitements of the human intellect is that high-tech society is inventing machines which will imitate as much of human mental activity as possible, and perhaps eventually improve upon human abilities. This area of study is referred to as Artificial Intelligence and may be envisaged as evolving in four distinct areas of interests: robotics, expert systems, neuropsychology, and philosophy.

The main purpose of this paper is to present from a psychological and philosophical perspective, the extent to which there exists a "bridge" between Artificial Intelligence and the human psyche. This will require taking an excursion into the world of brains, minds, and machines. The overall aim therefore is not to offer an exhaustive treatment of any particular aspect, but rather to present a divergent perspective of the relationship between Artificial Intelligence and the human psyche. Usually, academic papers focus on a certain strand of research in a specific field of study, converging facts, ideas, and opinions toward a new focus. I have, in this paper, deliberately chosen the diametrically opposite way--divergence.

At the outset, it should be mentioned that the use of the specific term "human psyche" is utilized here in a somewhat technical sense. Here, this expression is used in a holistic sense, which circumscribes the whole of the "human being," that is, the corporeal, the psychic, and the spiritual.

THE BIG QUESTIONS. What is the human psyche? What and where is the place of the mind in the human psyche? What is thinking? Is the act of thinking today the exclusive prerogative of humans? If thinking presupposes the existence of mind, to what extent are minds functionally dependent upon the physical structures with which they are associated? Can the mind exist independently of such structures? Or is the mind a functioning of such appropriate structures? Is it necessary that the required structures be biological in construction--i.e., brains? In the current context of our knowledge and technology, to what extent can we suppose that

we can replicate, model, or simulate the functions of the brain and/or mind respectively?

All these and other similar questions have been the nightmare of philosophers and thinkers. In our present generation we have experienced a sudden and brilliant flowering in the philosophy and science of the mind which has sought to integrate many specialist disciplines such as psychology, philosophy, linguistics, and neuro-science under a "unified field", known today as Cognitive Science. Gardner defines the field as a "contemporary, empirically based effort to answer epistemological questions particularly those concerned with the nature of knowledge, its components, its sources, its development, and its deployment."¹

THE BEGINNING. The ancient Greeks who believed in the fundamental rationality of human beings, were the first to raise in some sort of shape or form, the banner of Artificial Intelligence. Research in AI has proliferated since the introduction of the digital computer. The basis of AI is that all intelligent activity can be formalized and described by some sort of computable function--that is, that all human intelligence, can, in principle, be mimicked by a digital computer. According to Elaine Rich, "artificial intelligence is the study of how to make computers do things at which, at the moment, people are better."²

AI comprises hardware and software systems and techniques that attempt to emulate human, mental and physical processes. The mental processes emulated include thinking, reasoning, decision making, and data storage and retrieval, problem solving, and learning. The physical processes include human senses and motor skills.

Alan Turing, according to Firebaugh,³ was a mathematician and part of a British team that broke the German enigma machine cipher during World War II. In 1950, Turing wrote a paper entitled "Computing Machinery and Intelligence." In that paper, Turing is credited as being the conceptual father of AI. However, the field of Computer Science, is said to have begun in the summer of 1956 at Dartmouth College, where John McCarthy, the coiner of the term "Artificial Intelligence," then a faculty member of the mathematics department, convinced the Rockefeller Foundation to fund a summer study on "the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it." A group of ten scientists met to discuss the potential of computers for simulating human intelligence. These scientists represented fields including mathematics, psychology, neurology, neurobiology, and electrical engineering. Each of these participating scientists used the computer to conduct research in attempts to simulate aspects of human intelligence.⁴

Following the Dartmouth meeting, AI development went through an emotional roller coaster. Whereas, most authorities agree that AI seeks all manner of clever programming

techniques to force computers to emulate intelligent behavior, and use this to try to understand the cognitive process, beyond this, however, there is little consensus. Gardner says, "some definitions stress the devising of programs; others focus on programming languages, others encompass the mechanical hardware and the human conceptual component, as well as the software."⁵ The tension is between those who wish to replicate the exact human thought process and those who are satisfied with any program that simulates intelligent behavior. There, distinction must be made between the usage of the terms replication and simulation. Replication is the act or effort to construct mechanical models that operate in the same way as the human brain. On the other hand, simulation, essentially of human behavior by machines, consists in arriving at the same end results, but achieving them by different means. For example, airplanes simulate the flight of birds, and although both follow the same laws of aerodynamics, their mechanics of flight are very different.

PHILOSOPHICAL PERSPECTIVES. To this day, the dichotomy persists between the paradigms that either thinking is the way the brain does it or thinking is the results the brain gets. This has divided the AI community into what has been termed the strong and the weak schools of AI.

Also, in the battle between the philosophers and the scientists over thinking machines, two schools of thought exist: the top-down and the bottom-up schools. The top-down thesis is that human thought processes take place as a result of rule-based symbol processing in the brain, that is to say, the brain can put together symbols according to various rules, thereby generating the multitudes of cognitive states we call thinking. The bottom-up contention is that if we are ever to understand how the brain operates, we are going to have to start at the level of primitive processors functionally equivalent to neurons, and develop theories of how cognitive states and all the other things the topdowners attach symbolic significance to can possibly come about as the result of connections and interactions between such simple processing elements. It may be said, therefore, that the fundamental difference between the two schools is this: for the top-down AI, thoughts and ideas themselves are passive computational entities capable of being pushed around by rules of a formal system; while for the bottom-up AI, cognition involves active symbols arising from a collective of computational elements at the sub-cognitive level. Thus, for bottom-up AI, sub-cognition of the bottom derives cognition at the top, and the brain as hardware is simply a substrate in which active symbols can interact. From this perspective, thinking requires some kind of hardware in which active symbols can interact, but there is no absolute requirement that this material substrate must be functionally equivalent to a human brain but may differ greatly from it in its actual physical composition.

So far, it has been stated that the rule-based approach to cognition has been most obvious in AI. Simply stated, the

standard way to get a machine to act intelligently is to devise an intelligent set of rules and to program the machine to act accordingly. To make it simulate human cognition, give it humanlike rules. To make it learn, give it rules for adding or modifying rules. To make it "creative," figure out rules that will produce creative results.

This approach to cognition, where machines have been programmed with humanlike rules has had notable success. One example will suffice for our purpose here. It concerns PARRY, a program that simulated a paranoid patient well enough that psychiatrists communicating via computer terminals could not tell whether they were dealing with a real person or with a program. PARRY had rules not only for interpreting the psychiatrists' language but also for reacting to it emotionally in ways in which it responded. Thus, things the psychiatrists said could raise PARRY's anxiety, causing PARRY to respond irrationally or could reassure PARRY and bring it back to more rational discourse.⁶

As a model for human cognition, the rule based AI has created some discord, particularly as it relates to certain biological questions. Surely, nature could not have limited the totality of the human thought process as the rule-based cognitive model suggests.⁷ What the varied research does strongly suggest, however, is that whatever the structure of cognition may be, it is of a more makeshift and inelegant kind than classical wisdom would lead us to expect. Human cognition, thus, only approximates the idealized rationality of logic. In fact, digital computers cannot even approach the abilities of a three-year-old child. A close observation of the human mind in action reveals that the mind is awful at doing things that computers do easily, and by contrast brilliant at doing things that computers have a terrible time with. Essentially, where the mind is intuitive, insightful, and "sloppy," computers are methodical, stubbornly literal, and precise. The acknowledgement of the limitation that the rule-based model of cognition lays, opens a new window to a radical alternative: the AI subfield known as connectionism.

The human brain, by some conservative estimates, consists of about 100 billion neurons, and a single neuron may be linked to as many as a 100 thousand other neurons. This vast matrix of neuron connections may be what produces the grand collective conspiracy called the "mind." Inspired by this "neuroverse" (the universe of neurons), an innovative group of computer scientists, physicists, psychologists, engineers, and philosophers, have banded together to try to answer the question "if symbol processing or rule-based models are not the basis of the brain's ability to think, what is? They are seeking to explore the hypothesis that what produces thinking is the establishment, strength, and reciprocal feedback of interneural connections, not computation in the sense of manipulation of formal symbols. In short, thinking "emerges" from the process of neural connections forming and reforming.⁸

Artificial Intelligence and the Human Psyche

These researchers were stunned to discover that connecting transistor chips together in a crude simulation of the brain's architecture produced circuits with surprising abilities. Most remarkably, these circuits demonstrated something called "emergent behavior"--they performed on their own without instruction on how to proceed. No one knows how this occurs. These brainlike circuits, known as artificial network programs, can recognize a particular handwriting style or discriminate one person's face from another, something that is inordinately difficult for digital computers. Moreover, neural networks find the answer to every problem, regardless of how complicated it is, in about one-tenth of a second. Even problems that would involve a digital computer for minutes or hours get solved in a tenth of a second! The difficulty with artificial neural networks is the lack of precision compared to digital systems. A digital computer can compute numbers out to many decimal places, but answers resulting from neural networks might be correct only to within plus or minus two percent. Some answers will be slightly better than others, a close approximation, at other time, but only rarely will it reach the one exact answer. This is very similar to the way our brain works (at least in seeking close approximations to certain problems).

The connectionist view of cognition generates two arguments: one theoretical and the other practical. On the theoretical side the major problem is that connectionism offers no clear-cut procedure for getting from low-level energy states to high-level symbolic processing.⁹ In other words, what emerges is not "thinking." On the practical side, the argument "is that intelligent thinking can never be done in a connectionist network because you could never build a machine with enough connections."¹⁰

The ideas thus far presented by the supporters of the top-down and bottom-up schools, suggest that machines do not demonstrate cognitive (thinking) ability. The major disagreement between the two schools is on (1) the way thinking is done and (2) the manner by which thinking can be channelled in a medium different from the human brain.

CAN INTELLIGENCE BE ARTIFICIAL? It is generally accepted that human intelligence consists of facts, concepts, rules, and heuristic knowledge. Facts and concepts can be thought of as structures that house symbols. Rules and heuristic knowledge can be thought of as manipulators of the symbols. Mental models are formed using facts, concepts, rules, and heuristic knowledge in ever-changing arrays. As defined earlier, the field of AI can be viewed as the pursuit of emulating human intelligence. Simon states that the root of intelligence is symbols with denotative power subject to manipulation.¹¹

From an educational and psychological perspective, the noted Yale psychologist Robert Sternberg says that to understand intelligence completely, one needs to understand the relationship of intelligence to three things: The internal

Those who approach the study of human thinking from a view point of conventional science, biology and psychology, use the terms "mind" and "brain" as interchangeable. But are they interchangeable? Are the flower and its scent the same? Can they be divorced? Many researchers believe that they can explain the basis of the "mind" in terms and action of the brain and central nervous system. Generally, this is also true of most computer scientists, particularly those involved with the study and research of AI. A recent example is a book by Professor Marvin Minsky of M.I.T., one of the founders of AI, titled Society of Mind, which is totally devoted to describing mechanical structures and processes. Along the same vein, Professor B.F. Skinner of Harvard simply insists "It's Just Matter Over Mind."

In opposition to this view, a strong defender of the antimaterialist view, Nobel prize winner and founding father of modern neurophysiology, Sir John Eccles, believes that there is a nonmaterial thinking and perceiving self that entered our brain sometime during embryological development or in very early childhood, that there is, indeed, a ghost in each of our machines. He says it is this nonmaterial presence that makes us distinctly human. He further believes that it (the ghost or the mind) functions as a medium and actually exerts a certain physical influence in our computer like and biological brains causing some neurons to fire and others to remain silent. Eccles further asserts that he believes this nonmaterial self actually survives the death of the physical brain.¹⁷

In further support of the mind-over-matter debate, Donald MacKay of the University of Keel, England, believes that a nonphysical self helps determine the physical brains behavior--that the mind is the software of the brain. He even harbors the hope that the "human equation" survives its host computer brain's death.

Similarly, Nobel Laureate Caltech neurobiologist, Roger Sperry asserts that consciousness is actually a newly emergent property of matter that appears only in such complex, hierarchically organized physical systems as the human brain. Sperry argues that consciousness as a whole somehow supersedes the combined functioning of the brain's 100 billion neurons. Numerous other cases can be cited about eminent scientists who turned their intellect towards the puzzle of consciousness. Figures such as Von Neumann, after working on the mathematical side of quantum physics, left, asserting the belief that man possesses a nonmaterial consciousness, that can actually influence the world of matter. Nobel Laureate in physics, Eugene Wigner, suggests that consciousness is not only an important concept to be considered in physics, but is, in a sense the lather of heaven. He says that the concept of objects existing apart from consciousness is meaningless. He feels that, in some strange way, consciousness actually enters in and helps create what is perceived as reality.¹⁸

From a metaphysical perspective--metaphysics here defined as the science of the Real, of the origin of things, of the absolute, and, in its light, the relative¹⁹--intelligence, when taken to its most profound and universal of meanings, means both reason (ratio) and intellect (Latin: intellectus or Greek: nous). That is to say, that from this original sense, intellect stands above reason and is able to gain knowledge directly and immediately. On the other hand, reason is only the reflection of the intellect upon the mirror of the human mind. The real nature of intelligence, therefore, is ultimately to come to realize that in the end there is only one Absolute Reality. It is to realize cosmic Consciousness and the relativity of all else that is other than God. In this sense, intelligence is not what it has become so often in modern times: a mental acumen and diabolical cleverness which goes on playing with ideas endlessly without ever penetrating or realizing them.

As a result of the forgetting of the fundamental distinction between the intellect, which knows through immediate experience or vision, and reason, which can only know through analysis and division, the fundamental distinction between metaphysics as a sacred science or divine knowledge and philosophy as a purely human form of mental activity has been blurred or forgotten.²⁰ In short, intellect synthesizes while reason analyses.

From this point of view the word "intelligence," used along with "artificial" is hardly suitable, as the word "artificial" suggests "false," "not real," or some disparaging synonym applied to reflections of intelligence. Perhaps a more appropriate coinage is "Artificial Reason," since that is what AI programs seek to do best: simulate the function of human logical thinking. A further justification for suggesting the use of the term "Artificial Reason" occurs when the word "intelligence" is used as defined above. Then it alludes to the human spirit or soul of the "self," the essence of existence, the permanent principle, whereas, when the word "reason" is used it alludes to the analytical rational part of the human mind. The great 13th century Persian mystic Rumi, says, "It is reason which has destroyed the reputation of the intellect."

Reductionist ideology, often confuses these terms in such ways that when mention is made of the "self" or of the human "soul" or "spirit" reference is really made to "mind" or "ego;" and when "intellect" in the metaphysical sense is mentioned, reference is made to "reason;" and when "faith" is the issue, "logic" is brought in to oppose it. Clearly this is a case of category error. What, then, is the human psyche?

To answer this question, we ask: Is the human psyche multidimensional? We find in the field of modern developmental psychology some explanation of the various levels, stages, and strata of the human constitution--mind, personality, psychosexuality, character, consciousness, and object relations. Modern researchers, such as Piaget, Werner, Loe-

vinger, Arieti, Maslow, Jakobson, and Kohlberg, to name only a few, all agree in principle with the concept of stratified stages of increasing complexity, integration, and unity--i.e., the human psychic is multi-layered.

According to traditional wisdom or Eastern approaches to understanding the human psyche, there is also widespread agreement, that the psyche is as Wilber puts it in a "single spectrum."²¹ Modern psychologists, however, have continued to study the different layers of the spectrum as separate entities, thereby producing hypotheses and theories that are fragmented and unrelated to the total fabric. This is not to claim that the theories are in opposition to one another, rather, each separate fragment stands in complementary relationship to one another and each provides clarification that characterizes that specific level of the psyche. In the language of the philosophia perennis the psyche is a hierarchy of dimensional levels, moving from the lowest, densest, and most fragmentary realms to the highest, subtlest, and most unitary one.

One such transpersonal model is explained in the metaphysical doctrine of the Vedanta (chosen here for its holistic nature) as it pertains to the human "being." In this doctrine, first and foremost, comes the "Self" which is the transcendent and permanent principle. The "Self" is enveloped around five sheaths or layers. The lowest level is called the Annamayakosa, meaning the sheath made of food--that is the physical body and the material universe. Lama Gowinda describes this physical body as "the densest form of 'materialized consciousness'"²² The next level is the Pranamayakosa, meaning the energy sheath or the sheath made of biological functions, life-breath, emotions, bioenergy, etc. Both of these levels, the Annamayakosa and the Pranamayakosa, in Piaget's system, are the sensorimotor realms. Loevinger calls them presocial, just to mention two very general correlations with modern psychology. The Vedantic doctrine states that the third level is the Manamayakosa, meaning the mental sheath or the sheath made of mind which is the part of the psyche that stays "myopically" close to the five senses. For Piaget, this is the highest stage "formal operational" and for Loevinger this is the conscientious and individualistic stages.

Beyond mind, according to the Vedanta is the fourth level, the Vijnanamayakosa, meaning the Intellectual and intuitive Sheath or "the subtle realm." This is a very high form of mind. It is said to include archetypal processes, high-order insights and vision, ecstatic intuition, an extraordinary clarity of awareness, an open ground consciousness that reaches far beyond the ordinary ego, mind and body. As yet, there are no specific psychological correlates for this level and beyond. What follows the subtle realm is the causal realm, the fifth level, the Anandamayakosa, meaning the Blissful sheath. This is a realm of formless radiance into infinity, the breaking of all boundaries, high or low, and of absolutely panoramic or perfectly mirrorlike wisdom and awareness.

Bringing AI into the frame of the Vedantic model, it is evident that, from the perspective of the human psyche, what AI researchers have done to date, and very poorly at that, is to try to simulate the functions of the mental or psychological sheath, the Manamayakosa, i.e., of the mind, ego, logic, thinking, etc. For example, expert systems which deal with a very specific type of problem represent just one application of AI, which is the study of how to program computers to imitate products of human perception, understanding and thought. There are chess programs that can beat all but the world's grand masters,²³ medical problem-solving programs that can compete closely with physicians in the accuracy of their recommendations²⁴ and computerized devices that can read and understand speech. In addition, computerized neural networks, like humans, can train themselves to recognize patterns by looking at examples; they do not need formal rules for recognition built into them by programmers. Some AI researchers believe that they have been aiming much too high in their expectations to simulate the human mind, and as a result they have now shifted their focus to animal intelligence.²⁵ This is yet another sign of the complexity of the human psyche, and perhaps even a confession of how much we have underestimated the structure of the most powerful supercomputer in the universe--the human brain. "It has been said that one can never make an intelligent machine. The moment one succeeds, the machine no longer exists because the machine, by definition, do not possess feelings, consciousness, and its own goals in life that are necessary ingredients of true intelligence."²⁶

Others, however, assert that someday, with increasingly powerful machines and new insights into human mental processes, computers will be able to take over much of the job of thinking, in a similar fashion as the HAL device aboard the spaceship in the motion picture 2001: A Space Odyssey.²⁷ Computers, they say, will be able to match people's ability to perceive the environment and solve problems. Despite the partial successes of AI systems to date, some scientists argue that this does not prove that computers will achieve anything resembling the full breadth of human perception and thought.²⁸ Some reasons may be as follows:

1. AI systems fail to function with anywhere near the capacity or speed of the human brain. The brain is estimated to have one million times the computation rate of even the most advanced supercomputers, and its storage capacity is estimated to be ten million times greater.²⁹ Such capacity and speed seem critical for achieving insights and drawing analogies between one domain of thought and another.

2. AI systems are successful only in very narrowly defined fields, like diagnosis of infectious disease or chess playing. In spite of efforts to develop general problem-solving computers,³⁰ the ability demonstrated in one domain (e.g., disease diagnosis) does not easily transfer to a different domain, such as locating mineral deposits. In other words, computer "intelligence" seems to be very specific and

narrow in scope. One reason for this narrowness is that success in each domain depends on a lot of "common-sense know-how" and on special heuristics that cannot be translated into general symbolic rules that the computer can transfer from domain to domain. Indeed, the specialized rules and information must be gathered from human experts in each domain, through a process known as knowledge engineering.³¹

3. Even within a domain, there are a number of reasons why computers show limited ability. For one thing, there are no effective ways of putting into computer code all aspects of the reasoning of human experts. Sometimes, the experts can only say, "I know it when I see it, but I can't put it in words."³² In addition, part of being an expert is knowing about cases in which standard rules do not apply. Computers are still not very good at this, or at realizing that the solutions arrived at just do not make sense and that a new approach should be tried. Also, humans are particularly good at drawing analogies and making associations among different domains. For example, applying knowledge about the behavior of fluids and other physical systems that exist within a state of apparent chaos has recently generated insights regarding economic trends.

4. A further limitation of the AI system based on symbolic manipulations comes from their dependence on "if-then" rules of the following sort: "If a patient reports a fever, then look for an infection." The handicap is in telling the computer how to recognize the "if" condition in the real world.³³ Consider the following example: "If it's a dog, then feed it." and "if it's a clock, then set it." Humans can recognize patterns like clocks and dogs with ease, but computers are very poor at these kinds of tasks. In contrast, many scientists believe that computerized neural networks will do a much better job of recognizing ill defined patterns than will the rule-based logic typical of the original AI efforts.³⁴

The neural networks developed so far, however, still fall well short of the capacities of the human perceptual system. For example, they are incredibly slow to learn how to classify patterns, and unlike humans they do not show sudden insight when a key feature is suddenly discovered.

Despite all the limitations stated thus far, the most important new evidence will come from examining the successes and failures of the best AI systems in their efforts to mimic human perception and thought. This evidence should emerge as computer scientists begin to use techniques that are more similar to processes in the human brain. These include programming neural networks and use of multiple computers (parallel processing) that can work together, just as the many neural and chemical elements of the brain are active at once.

In addition, linking together more and more computers may begin to reduce the gap between the capacities of com-

puters and of the human brain.³⁵ Finally, more and better psychological theories regarding human ideas, intention, and insight will provide more useful information to the computer scientist about how these cognitive processes are actually carried out. From another perspective, the mind has now been associated with the microchip or the new type of chip known as the biochips, which proposes to merge computers and biology. Thus fusion between physical and biological sciences has led some futurists to foresee the emergence of molecular computers that design and reproduce themselves following DNA blueprints and that can be integrated in the human biological system as a part of a person's ability to control his senses and manipulate information from the outside world.³⁶

As explained earlier, the human psyche is multidimensional and multilayered. Correspondingly, an analysis of the structures and elements of knowledge shows the following components hierarchically placed. At the base of the hierarchy are data. The next levels are information and knowledge. The top level of the structure is wisdom. Data comprise the raw materials, the building blocks for information. On their own they have little use. The processed data, data that are collected, sorted, and interpreted, form information. Sorting the relevant from the total is an act of processing. Information is an accumulation of refined data. Information by itself may be short lived, unless linked to other relevant information. The next level is therefore synthesis. During synthesis, information is compared to other information and combined in significant links to form a pattern of knowledge. This is relevant, concentrated information which undergoes a metamorphosis to become knowledge. Knowledge standing alone is more significant to the holder than information alone. The information evolution process can end with knowledge. However, the data evolution continues beyond knowledge. The holder of knowledge taps into data and information pools to achieve resolution to challenges and opportunities.

Individuals, groups, and cultures collect and process information and output knowledge. This knowledge is then compared to other knowledge collections to provide insight and guide decision. When the collected knowledge is evaluated against values, judgment, laws and other higher-order standards, a knowledge system results, and over time wisdom is born. The highest order in the data evolution process is wisdom. According to many, knowledge is, or should be, the outer limit of machine systems.³⁷

The following diagram illustrates the approximate correspondence between the hierarchical structure of the human psyche and the structural components of knowledge of the context of the Vedantic model explained earlier.

Artificial Intelligence and the Human Psyche

The Human Psyche (structure)	Levels	Structure of knowledge	Outer limit of machine systems
ATMAN	THE SELF/SOUL	SACRED REALM	
Anandamayakosa	Causal	Bliss	
Vijnanamayakosa	Subtle	Wisdom	
Manamayakosa	Psychological	Knowledge	<=====>
Pranamayakosa	Biological	Information	<= AI Boundary =>
Annamayakosa	Physical	Data	

It can be seen from the illustration that the outer limits of AI barely come close to the realm of the mind. Even at the level of the physical brain, the most complicated biologically known structure with its 100 billion neurons and 2^{10} possible states, more than the total number of atoms in the universe (10^{78}) by a factor of 2^{100} billion, it is hard to believe that even in some distant future, any mechanical contraption would be able to simulate the function of the human brain.

Philosophers tell us about the distinction between two kinds of apprehensible human experience: on the one hand, our experience of nature as we recognize it through our senses, from which comes our capacity to measure and to count, and with it, all that is brought in the way of new events and new explanations; and on the other hand, our immediate and imminent experience of something more real, less dependent on thought or on the processes of the mind, but directly given to us, which has been identified by mystics as religious or spiritual experience. Naturally, since our brain is material, and its processes and all the consequences of its processes are material, the moment that we put either thought or spiritual experience into words, this material basis of the brain must give a material presenta-

tion to even the highest, most transcendent spiritual experience. It is at the level of the anandamayakosa that this experience takes place, and that is among others, singularly the most significant element in the human psyche, which sets human beings apart from the rest of the universe.

It can safely be said that neither at the "physical," "biological," or the "psychological" levels of the psyche (not to mention the subtle and causal levels), has any AI machine or program ever been conceived that can completely model these levels. Currently AI systems are nothing but brighter and dimmer reflections of the psyche at its very elementary levels. What is required, therefore, is deeper and more profound understanding of the inter-relationship of the various levels of the human constitution, or a rediscovery of the "anatomy of being."

Perhaps most reasonable conclusion is that, though today's most sophisticated computers cannot perceive and think about the world at large anywhere near as well as humans can, and that our current understanding of the bridge between AI and the human psyche is only in its embryonic stage, the field of AI is likely to see dramatic breakthroughs, which will revolutionize our whole way of thinking, learning, and creating.

¹Gardner, H., The Mind New Science. 1985. See p. 6 for a detailed construct of the emergence of cognitive science.

²Rich, E., Artificial Intelligence. New York, NY: McGraw Hill, Chap. 1

³Firebauch, Morris, W. Artificial Intelligence. Boston, MA: Boyd and Fraser Pub. Co., 1988.

⁴Gardner, H. Op. Cit., p. 138-139.

⁵Ibid., p. 140.

⁶Colby, K.M., "Modeling a Paranoid Mind." Behavioral and Brain Sciences. 1981: 4 (4): p. 515-534.

⁷Bereiter, C., "implications of Connectionism for Thinking About Rules." Educational Researcher. 1991: 20 (3) p. 11.

⁸See the works of Frank Rosenblatt of Cornell University in the late 1950's who produced an artificial neural net (the perceptron).

⁹Casti, John L., Paradigms Lost. New York, NY: Avon, 1989. p. 314.

¹⁰Ibid.

¹¹Simon, H.A., The Sciences of the Artificial. Cambridge, MA: MIT Press, 1981. Chapter 3.

¹²For a complete description of the theory see Sternberg, R.J., The Triarchic Mind: A New Theory of Human Intelligence. Baltimore, MD: Penguin, 1988.

¹³For complete details on the theory of multiple intelligences see Gardner, H. Frames of Mind: The Theory of Multiple Intelligences. New York, NY: Basic Books, 1983.

¹⁴Adler, M.J., Intellect: Mind Over Matter. New York, NY: MacMillan, 1990.
p. 5-7.

¹⁵For a broader perspective of the argument, see Robertson, J.H. "The Phenomenon of Intelligence as seen by a Lay-Scientist. Zygon: 1985. 20, 4.

¹⁶Adler, Op. Cit., p. viii.

¹⁷Gliedman, J., "Scientists in Search of a Soul." Science Digest: July, 1982: 90. Eccles, Sir J. and Robinson, D.N., The Wonder of Being Human. New York, NY: The Free Press, 1984.

¹⁸Wigner, E., Symmetries and Reflections. Bloomington, IN: Indiana University Press, 1967.

¹⁹A metaphysical doctrine is the incarnation in the mind of universal truth. A philosophical system is a rational attempt to resolve certain questions which we put to ourselves: See F. Schuon, Spiritual Perspectives and Human Facts. New Rev. Ed. London, Eng.: Perennial Books, 1970. p. 11.

²⁰See. Schuon, R., Esotericism As Principle and as Way. Trans. by Wm. Stoddart. Middlesex, Eng.: Perennial Books, 1981.

²¹Wilber, K., The Spectrum of Consciousness. Wheaton, IL: Theosophical Publishing House, 1977; 1985.

²²Gowinda, A., Foundation of Tibetan Mysticism. New York, NY: Samuel Weiser, 1973. p. 148.

²³Best, J.B., Cognitive Psychology. St. Paul, MN: West Publishing Co., 1989.

²⁴Goldman-Rakvic, P.S., "Development of Cortical Circuitry and Cognitive Function." Child Development. 1987: 58, p. 601-622.

²⁵Dworetsky T., "Mech Animals." Omni Magazine: 1991, March, p. 50.

²⁶Kong, K.L., "Can Intelligence be Artificial?" The Bulletin of the Hong Kong Psychological Society. 1988. p. 21.

²⁷Clarke, A.C., July 20, 2019: Life in the 21st Century. New York, NY: MacMillan Publ. Co., 1986.

²⁸Dreyfus, H. and Dreyfus, S., "Why Computers May Never Think Like People." Technology Review. 89. p. 41-61; Dreyfus, H. and Dreyfus, S. "Making a Mind Versus Modeling the Brain: Intelligence back at the branch point." in S.R. Graubard (Ed.). The Artificial Intelligence Debate. Cambridge, MA: MIT Press, 1988; Graubard, S.R. Ibid.

branch point." in S.R. Graubard (Ed.). The Artificial Intelligence Debate. Cambridge, MA: MIT Press, 1988; Graubard, S.R. Ibid.

²⁹Schwartz, J.T., "The New Connectionism: Developing Relationships Between Neuroscience and Artificial Intelligence." S.R. Graubard, Ed. Ibid.

³⁰Newell, A. and Simon, H.A., Human Problem Solving. Englewood Cliffs, NJ: Prentice Hall, 1972.

³¹Chignell, B. and Peterson, J.G., "Strategic Issues in Knowledge Engineering." Human Factors. 1988. 30, p. 381-394.

³²Graubard, Op. Cit.

³³Ibid.

³⁴Cowen, G. and Sharp, D., "Neutral Nets and Artificial Intelligence." in S.R. Graubard. Op. Cit.

³⁵Rumelhart, D.E., McClelland, J.L. and the PDP Research Group. Parallel distributed Processing: Vol. 1: Foundations. Cambridge, MA: MIT Press, 1986. Waltz, D.L., "The Prospects for Building Truly Intelligent Machines." The Coming Era in Science. Ed. by Holcomb B. Noble. New York, NY: Little, Brown and Co., 1988.

³⁶Edelhart M., "The Biochip: Merging Computers and Biology." in The Coming Era in Science. Ed. by Holcomb B. Noble. New York, NY: Little Brown, 1988.

³⁷Weizenbaum, J., Computer Power and Human Reason. San Francisco, CA: W.H. Freeman, 1976. Chap. 1

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CONSCIOUS EVOLUTION:
HOMO SAPIENS IS CREATING HIS OWN
SUCCESSOR SPECIES

Alexander J. Nader

After recounting high points of the history of robotics and the present state of that area of technology, the author introduces the ways in which the computer enables us to take new steps in the evolutionary development of human nature.

A man should never be required to choose between doubt and belief. He should be able to intermingle both in due proportions. The spirit of open-mindedness and impartiality is to the intellectual world what brotherhood is to the ethical world.

James H. Hyslop
Founder of the American Society
for Psychical Research.

In order to discuss anything that is "artificial," one has to consider: What is "natural." Thus, before getting into the area of artificial intelligence and its implications for religion and psychical research, it is necessary to take an overview at what is considered normal human intelligence.

In speaking of today's human being, we are discussing the result of a million years of evolution from our earliest human ancestors. In doing so, we must be mindful of the changes that have taken place physically and mentally. It is fair to observe that today's human is more highly evolved in terms of the relationship existing between the individual and his environment, using this concept in the broadest terms.

In this evolutionary trip through time, humans have developed tools to assist them and to serve them. Everything from the first use of a branch from a tree to ward off a physical threat from a beast or fellow human being to the present day use of modern medical diagnostic instruments which permit physicians to peer into the human body and see three dimensionally.

However, not only have these tools served us during this long period they have, in reality, altered us in the process. As we created tools to assist us to cope with our environment, these tools altered our environment. There has been interaction on all levels, and we humans have been shaped in our evolution as a result.

At first, the drive for survival was instinctual. Later, the drive for survival was based on intellectual awareness that humans were mortal beings. Self-preservation became the primary human drive and this meant constant ad-

justing to the many conditions and situations which confronted these humans on a daily basis. From this has evolved our culture with its institutions, traditions, societal structures, and its belief systems. Underlying these developments was the awareness that we are biological entities and that our bodies housed our consciousness only so long as the body remained alive. This in turn led to the search for the meaning of human existence.

Thus, while humans were concerned with taming the environment of planet Earth, they were also concerned with the existential questions. Accordingly, there was constant inter-relatedness, and our tools were not only for handling the physical aspects of living, but the metaphysical aspects as well.

Tools allowed humans to evolve from scavengers to hunters to farmers to white collar workers; instead of using the ax, we now use the pen. Survival has stopped being a full-time effort and humans have enough time to spend an expanding their control of the planet and, lately, of the universe through space travel. Myths developed and evolved into religions and philosophical systems which, in turn, became tools for seeking meaning in our lives. To see that this is a major preoccupation of human thought explore any serious book store or public library and immerse yourself in the thousands of titles purporting to investigate and explain the human condition. In fact, this conference is a direct outgrowth of this human drive.

Consciously or unconsciously, our metaphysical, religious, and spiritual practices are attempts to transcend the limitations imposed upon us humans by our biological structure. Whether we are meditating, praying, channeling, healing, philosophizing or having out-of-body experiences, we are attempting to pierce the veil of ignorance which keeps us from knowing what occurs to our consciousness, our identity, when our biological body dies.

This, then, is what natural intelligence is all about. We are evolving our tools on planet Earth in an effort to control our environment and to solve the mystery of our existence.

This leads us to the point where artificial intelligence can be brought into the discussion. And, based on the foregoing discussion of the interaction between humans and their tools, AI is nothing more than one of the latest tools to be developed by humans in an effort to cope with their human and earthly conditions.

But AI is not your everyday tool. It has come to mean the capability of a machine to imitate human behavior; or the capacity of a computer to perform operations analogous to learning and decision-making in humans.¹

Before going into more detail, an overview of how the

biological and the synthetic are already interfacing will be of value to our discussion.

Although we think of humans as being biological beings, the recent trend in medical science, chemistry, engineering, and other scientific disciplines has been to effect a symbiosis between the biologic and the synthetic. This has occurred as new technology started being used to correct many physical defects and disabilities, such as hip replacements, pace makers, eye implants of lenses, organ transplants, and other procedures designed to save lives and to prolong life expectancies. In effect, a "retooling" of the human body" is taking place!²

Great strides have taken place in understanding just how the human body works. Engineers and other technicians have begun to model the various parts of the body by using bio-compatible materials, by using the miniaturization of electronic parts to build small motors capable of governing motion, and by developing the techniques of micro-surgery which allow physicians to fuse the synthetic with the natural.

This symbiosis between the biological and the synthetic allows for the repair and replacement of bodily parts and, as this trend continues, this symbiosis becomes acceptable and "natural." The implications of this evolutionary development are staggering since it is no longer considered contrary to nature, nor do religious groups consider it against God's will to alter our bodies in this manner.

Thus, our tools continue to shape our evolutionary direction and we, in turn, utilize these tools to increase our control over our physical destiny while freeing our minds for metaphysical concerns.

As an aside, I would like to mention that not all of this technological advance is developed from altruistic concerns. The providing of artificial body parts worldwide has grown into an industry with sales reaching \$20,000 billion. Yet commerce is also a human tool necessary for humans to operate in this world, thereby reinforcing this interdependence.³

Most of what I have said so far should not be new or surprising to the reader. In fact, any one who has done any reading of science fiction has seen all this played out and described in great detail. Some of the terminology is the same and some of it is newly created. Robots and robotics are two terms that are used along with artificial intelligence. Their definitions are as follows.⁴

Robot: This word comes from Czechoslovakian and means "worker." It was first used in 1921 by Karel Capek, a well-known playwright and science fiction writer, in his play R.U.R. (which stood for "Rossum's Universal Robots"). The play was really a political statement, but the world took

the word "robot" into its vocabulary, and it is used universally.

In today's world, Robot is defined as "an automatic apparatus or device that performs functions ordinarily ascribed to human beings or operates with what appears to be almost human intelligence." However, contrary to science fiction, today's robots have not yet taken on the semblance of a human form. Nor are they capable of independent action beyond their specific programs.

Robotics. This is the technology dealing with the design, construction, and operation of robots in automation. This is referring to manufacturing operations in factories, or to attachments on other machines. Also, robots are used to handle activities too dangerous for humans such as dealing with nuclear radiation or defusing bombs, as well as in space.

Interestingly, the engineering techniques that I mentioned as being used for repairing and enhancing the human body are also being used to enhance the capabilities of robots so that they may handle more of the chores necessary for human development. The most dramatic recent testimony of this growing interdependence has to do with the proposed space station that the United States wants to build and use as launching outpost for the manned exploration of the solar system.

Originally, it was estimated that once built it would take approximately 130 hours of extra-vehicular work (that is, space walking) by astronauts to do the maintenance chores. However, after additional design work, this figure jumped to 2200 hours, at a minimum. This was determined as an intolerable amount of time since the human body cannot survive this much exposure to radiation, small meteoroids, and flying debris. This was unacceptable to the planners.⁵

In testimony to Congress, Dr. David Provost, head of NASA's Robotics Laboratory at the Goddard Space Flight Center, stated: "Robots are being explored as an alternative to astronauts for some maintenance tasks." He added that at least 25% of the work load would be taken over by robots in the beginning and, eventually, this would be increased to 50% and then up to 70%. In this testimony he stated, "The evolutionary potential of a robot is to duplicate a human. It is easy to envision, 5 or 10 years from now, ones that are exceedingly intelligent and very capable."⁶

In support of this view, Dr. William Fisher, an astronaut and a team leader studying the need for maintenance man hours said that advanced robots "were the way to go." He is further quoted as saying: "...NASA could meet the problem if it quickly developed advanced robots for the maintenance chores and also redesigned parts...There's littlepoint sending men on a mission better accomplished by robots."⁷

Robotics and AI meet by virtue of the fact that the brain of a robot is a computer and this computer and its program is a product of artificial intelligence.⁸

The modern computer is only 40 years old. The first meeting by computer scientists to discuss cybernetics which was the forerunner of AI was in the mid-1950's. At that time, these scientists felt that they would be able to duplicate human brains and develop an intelligent robot in a matter of a few years. This has not happened, as we know. But, what has happened is that the computer as a dumb tool has emerged as a vital and necessary companion for humans trying to cope with the tremendous amount of information necessary to function in the modern world. In fact, as we use the computers, we endow them with human attributes that they do not yet possess.⁹

Also, during this period, computational science and robotics have mushroomed into a major academic and industrial activity. Every university with any interest in science and every corporation involved in science and technology have their own departments researching, developing, and utilizing the latest advances in the field. Once again, the profit motive is heavily involved on a global scale. The two main players are the United States and Japan. To hear some observers describe it, the race for bigger and more powerful computers is more dramatic than the race for any other form of industrialization and trade leadership.

Massive amounts of research and development funds are being expended by the military arm of most governments interested in military uses of intelligent computers, mobile robots, and autonomous vehicles.¹⁰ All of this is another illustration of the evolutionary trend towards the coming together of the human and the increasingly indispensable computer in all its forms.

If I seem to be skirting the issue of my subject, i.e., the implications of AI for religion and psychical research, I want to establish that AI is not new, nor is it the brain-child of a few overzealous science fiction fans working out of some remote laboratory, hidden from the real world. AI is the real world and its impact upon each one of us here today is being felt by us daily, whether we know it or not and whether we want to admit it or not.

I want to quote several of the leading individuals who are acknowledged for their contributions to this field in order to give you a flavor of the very fundamental issues involved. This will assist us in facing the implications of AI for all aspects of our human activity and identity.

Sherry Turkle, a Ph.D. in sociology and psychology from Harvard University and an associate professor in MIT's program in Science, Technology, and Society:

Computers provoke debate about education, society, politics, and, most central to the theme of this

[subject], about human nature. In this the computer is a "metaphysical machine..."the subjective computer." This is the machine as it enters into social life and psychological development, the computer as it affects the way we think, especially the way we think about ourselves...the unstated question that lies behind much of our preoccupation with the computers' capabilities. The question is not what will the computer be like in the future, but instead what will we be like, what kind of people are we becoming."¹¹

Robert Jastrow, a Ph.D. and internationally recognized authority on matters of space, astronomy, and geology, was the founder of NASA's Goddard Institute for Space Studies, professor of astronomy and geology at Columbia University and professor of Earth Sciences at Dartmouth College:

Today man stands at the summit of creation on the earth... The fact that the brain is no longer expanding, after a million years of explosive growth, suggests that the story of human evolution may be over. This does not mean that the evolution of intelligence is over. It is reasonable to assume that human beings are not the last work in the evolution of intelligence on the earth but only the rootstock out of which a new and higher form of life will evolve, to surpass our achievements as we have surpassed those of Australopithecus and Homo erectus...If the past is any guide to the future, mankind is destined to have a still more intelligent successor...The new form of life is being created today in the laboratory of the computer scientist. It is an artificial life, made out of silicon chips rather than neurons; yet it thinks, remembers, learns by experience and responds to stimuli. Its thinking is still simple; it is not very creative; but it is evolving at a lightning pace."¹²

Marvin Minsky, a Ph.D. and one of the original pioneers in artificial intelligence research, professor of computer science at MIT, and mentor to a new generation of computer scientists who are themselves blazing new trails in AI and robotics:

If it was possible, I would have myself downloaded. Why not...The idea of not dying just after you've learned almost enough to solve a problem is compelling. It doesn't have to be immortality, but it would be nice to live 500 years, wouldn't it? Right now, there's too much known for anyone to understand in a single lifetime. And there's no reason the system should break down if you use modern reliability techniques because you replace each of the parts. The trouble with biology is that it tries to fix things, but it isn't very good at it. If you look at the error checking in

the cell-repair part of the genetic code, it's really contemptibly low-grade compared to what we could do now if we redesigned the whole thing... When it comes to downloading, you could make up ethical problems easily enough... Ethical problems are actually political problems and evolutionary problems... I think that the importance of downloading is just allowing evolution to proceed. And evolution seems to be leading to a machine consciousness.¹³

Douglas Hofstadter, a Ph.D. and a prolific writer about computers and artificial intelligence, as well as a researcher and professor at the University of Michigan:

Minds exist in brains and may come to exist in programmed machines. If and when such machines come about, their causal powers will derive not from the substances they are made of, but from their design and the programs that run in them. And the way we will know they have those causal powers is by talking to them and listening carefully to what they have to say... No one knows where the borderline between non-intelligent behavior and intelligent behavior lies; in fact, to suggest that a sharp borderline exists is probably silly... But essential abilities for intelligence are certainly: to respond to situations very flexibly; to take advantage of fortuitous circumstances; to make sense out of ambiguous or contradictory messages; to recognize the relative importance of different elements of a situation; to find similarities between situations despite differences which may separate them; to draw distinctions between situations despite similarities which may link them; to synthesize new concepts by taking old concepts and putting them together in new ways; to come up with ideas which are novel.¹⁹

Hans Moravec, a Ph.D. and director of the Mobile Robot Laboratory of Carnegie-Mellon University and researching the "postbiological future":

...trial and error work on mobile robots is not a disadvantage but an assurance of ultimate success, especially in the field of artificial intelligence. We are trying to recapitulate the evolution that produced intelligence, and mobility is a major key because only mobile animals need intelligence. By seeking what works in mobile robots, we'll be forced to converge on the same sort of solutions that evolution arrived at... Today the skills and memories of computers are shared by the routine transfer of programs and data between different machines. Robots of the future will use similar techniques to share their mental states. In time sophisticated scanning techniques may make

it possible to move the contents of biological human brains into other machinery in a similar way. By such techniques our individual personalities may survive the obsolescence of their biological heritage to join in the future growth and evolution of our cultural progeny...Robot minds will be free to move between radically different bodies, so the question of just what they will look like is not well defined.¹⁵

Joseph Deken, a Ph.D. and program director for information service and technology with the National Science Foundation, and former professor of mathematical and computation science at Princeton, Stanford, and the University of Texas, and author of Silico Sapiens:

Between the technology of typical computers and the biology of living things lies a fundamental "abstraction gap." The missing links, which must evolve before computers can span the abstraction gap and reach into the world as a new life-form, are "sensation and action." These links are now emerging, not from countless millennia of natural evolution, but from sophisticated human technology...The abstraction gap is losing. From that perspective, the fusion of sensors and actuators with the rudimentary silicon "brains" we now call computers is more than a momentous technological threshold. We are seeing the first prototypical forms of Silico Sapiens, and the dawn of robot life. ...With sensation and action under their own control, computers can begin to break out of their restraints, transforming radically from guiding humans to independent, self-determining systems. Such change is not simply technological progress. It is the beginning of an unprecedented and divergent stream of solution. Even in its most limited course, that stream will interweave us with our technology and our biological neighbors in a new symbiotic fabric. Beyond that, it is likely that silicon systems and their evolutionary descendants will expand in a metamorphosis paralleling that of carbon biology, exploding over time into a kaleidoscope of alternative forms of life.¹⁶

These statements should give you a flavor of the direction that the development of AI and robotics is currently taking as well as an insight into the mind sets of some of the leaders in the field. Comfort can be taken from the unhurried pace that they appear be taking. They admit that after their first enthusiastic foray into the field back in the late 1950's and early 1960's, they settled down to their current painstaking and time-consuming investigations and experimentations.

Criticism of Robotics. It must be noted that this development of AI robotics is not without controversy within

the scientific community and among the participants in development of AI. The controversy centers around the question of whether AI will eventually become an independent life form or remain a mechanical instrument dependent on humans for its effective utilization. There is no argument as to the tremendous value of computer technology and advanced programming.

The most recent contribution to this on-going scientific jousting comes from the mathematician Roger Penrose author of The Emperor's New Mind: Concerning Computers, Minds, and the Laws of Physics. Penrose's position can be best summed up by quoting from the Foreword written by Martin Gardner, himself a mathematician and author:

Penrose's book is the most powerful attack yet written on strong AI. Objections have been raised in past centuries to the reductionist claim that a mind is a machine operated by known laws of physics, but Penrose's offensive is more persuasive because it draws on information not available to earlier writers. The book reveals Penrose to be more than a mathematical physicist. He is also a philosopher of the first rank, unafraid to grapple with problems that contemporary philosophers tend to dismiss as meaningless...Penrose's achievements in mathematics and physics...spring from a lifelong sense of wonder toward the mystery and beauty of being. His little finger tells him that the human mind is more than just a collection of tiny wires and switches. The Adam of his prologue and epilogue is partly a symbol of the dawn of consciousness in the slow evolution of sentient life. To me he is also Penrose...who dares to suggest that the emperors of strong AI have no clothes. Many of Penrose's opinions are infused with humor, but this one is no laughing matter.¹⁷

Two other prominent scientists on Penrose's side of the argument are John Searle and Hubert Dreyfus. They, too, have written penetrating works contesting the ultimate emergence of a new life form or independent, non-biological mind. And predictably, the Minskys and Hofstadters of the AI world have met them head on. Meanwhile, both sides continue with their respective scientific approaches to AI.

One project worth describing here demonstrates the amount of hard work and creative ability required to further computational progress. Doug Lenat, now in his 30s, is a prize winning AI programmer and innovative scientist. He received his Ph.D. from Stanford's computer science department, taught at Carnegie-Mellon and Stanford, then started his own independent programs. Then, in 1984, he received an offer that would be the answer to the most desired dream of any AI researcher.¹⁸

Microelectronics and Computer Technology Corporation (MCC), an Austin, Texas research and development consortium made up of Digital Equipment Corporation, Kodak, Apple Computer, NCR and Delicore, proposed that Lenat take on a 10 year development program to figure out just how to program "common sense" into computer programs and systems. This proposal was backed up by a \$35 million budget.

The goal of this program, which Lenat dubbed "Cyc" (from the word "encyclopedia"), is to feed this program at least 100 million pieces of knowledge so that a computer will be equipped with all the general knowledge of the average adult. By the end of 1990, Cyc had only 2 million bits in its data base after 6 years of work. Lenat optimistically states that he is right on schedule. "Teaching a computer all the ordinary things human beings take for granted is not an easy job. We have to put in ten times as much information as I thought we would; but we are doing it ten times as fast." He feels that now that the major development work has been handled, the remaining 98 million pieces of information can be added over the remaining four years. The "feeding" process is being done in a painstaking manner by a team of cross-culturally experienced individuals who put the information into a program after carefully figuring out what it is that is necessary for the computer to know so that it can meet the demands of becoming an "educated" adult human.

The vision held by Lenat is that Cyc will soon understand English well enough so that it can continue its own education by reading books,, newspapers, and magazines, and then discussing them with human tutors. Ultimately, Cyc is destined to serve as a kind of knowledge fountainhead for other computer programs, allowing them to tap into a generalized data base so that they can then apply what they learn to their own particular needs and areas of expertise.

Needless to say, there are many detractors who say that Lenat will never achieve his goals and that his efforts are doomed to failure. but he is getting strong support from the AI community, especially his former colleagues at the various universities where he trained and researched. In general, serious students of AI respond to the idea of the possibility of failure by declaring, "Who cares!" They go on: "If it does not work, we are likely to find out why and learn from it. So what if it does not get done in 10 years? What if it takes 20 years? As long as it works, or as long as we learn how to develop programs that lead to the equivalent of human intelligence."

It is also important to remember that MCC's consortium members are all profit seeking corporations heavily involved in the computer industry. Whatever results come out of Lenat's efforts will directly benefit their own business goals and enhance their competitiveness.

Meanwhile, Cyc is growing and able to communicate with its tutors. Displayed on a computer screen, Cyc can ask its

own questions to clarify points; to discuss contradictions it perceives; and to fill in the gaps. All this is done in plain English. An example of this resulted as follows, as Cyc asked, "Reproductions make sense for works of art, but someone is using the word to apply to something else besides a work of art. Is it OK for something that is partially tangible to have reproductions made of it?"

Another exchange is even more interesting, particularly for this audience. Cyc had been fed the information that intelligent things tend to like other intelligent things of the same type. Later, one of the women programmers told Cyc that she liked it. As a result, Cyc asked Lenat:19

Cyc: All the others who work on this project are people. Am I a Person?

Lenat: No.

Cyc: Is anyone else who works on this project a computer program?

Lenat: No.

Since Cyc does not need to sleep, at night it looks over its knowledge base in search of interesting analogies. Lenat and his team then go over these analogies in the morning and weed out any flaws that may appear. And, Lenat adds that once Cyc is able to learn to digest plain English, its rate of growth in its knowledge base "will explode!" However, to learn natural languages, Cyc must continue to be fed the information on the present basis so that it will be prepared for the next step in its education. In anticipation of this eventual breakthrough, Lenat and his team are beginning interface studies so that they can make the shift when the time is ripe.

Marvin Minsky, noted earlier as a pioneer in AI development, is a friend and supporter of Lenat. In discussing what "common sense" means and why it is so painstaking to program, he states:

It is not a simple thing. Instead, it is an immense society of hard-earned practical ideas--of multitudes of life-learned rules and exceptions, dispositions, and tendencies, balances and checks...If common sense is so diverse and intricate, what makes it seem so obvious and natural? This illusion of simplicity comes from losing touch with what happened during infancy, when we formed our first abilities. As each new group of skills matures, we build more layers on top of them. As time goes on, the layers below become increasingly remote until, when we try to speak of them in later life, we find ourselves with little more to say than "I don't know."²⁰

Religion, Psychical Research and AI. Lawrence LeShan in The Medium, The Mystic, and the Physicist states that psychical research is the study of the basic nature of man.

He then goes on to ask what he considers the most critical question of all: "What is man?" In elaborating his concern for answering this question he adds the following comments:

How we treat other men and how we treat ourselves depends on our answer...A change in our concept of man leads to changes in our behavior...Psychical research has given us the clues and clear signposts to a new concept, a more accurate picture based on a deeper understanding. This new picture is hard to see as yet...There is more to man and his relationship to the cosmos than we have accepted. This "more" is also of a different kind and order than the parts we know about...man is far more than he seems to be, more than the materialist philosopher has ever conceived of. He can and does touch others and the universe in a way we do not yet understand, but in a way obeying quite different laws than do his senses.²¹

Religion is treated by Theodosius Dobzhansky in his The Biology of Ultimate Concern in quoting B. Malinowski:

Religion...can be shown to be intrinsically although indirectly connected with man's fundamental, that is, biological needs. Like magic it comes from the curse of forethought and imagination, which fall on man once he rises above brute animal nature...The existence of strong personal attachments and the fact of death, which of all human events is the most upsetting and disorganizing to man's calculations, are perhaps the main sources of religious belief. The affirmation that death is not real, that man has a soul and that this is immortal, arises out of a deep need to deny personal destruction, a need which is not a psychological instinct but is determined by culture, by cooperation and by the growth of human sentiments.²²

Maurice Friedman, in To Deny Our Nothingness, states:

Whatever may be the case with "religion," the religious man has always been aware of the central importance of the image of man. This is because the religious life is not in the first instance philosophy or gnosis--an attempt to know about the world of God, but a way that man walks with God...the central reality from which all religious teachings spring and to which they again and again point back [is] the image of man.²³

It would appear that the concerns of religion and psychical research (hereafter RPS) meet AI on the question of identity of the human and the future treatment each party gives to the human.

As humanity learns to alter itself at will through the latest advances in technology and is able to communicate this new knowledge to its subsequent generations, the classical view of evolution is being changed dramatically. Consequently, humans are being active participants in their own evolution and are able to determine what their evolving life form will become.

We are talking of a major upheaval in every facet of our lives. Yet, no matter what the individual's orientation up to this point of human development, the new paradigm can accommodate it since it is so vast and unstructured. That is, religious concepts which have always granted to a God supernatural attributes can now be put into this practical application as the human evolves into this new being. Death can be confronted by all humans in an aggressive manner and diminished in its role as an instrument of existential terror. The human maintaining its biological body can have a surrogate body to roam the universe without fear of damage to the fragile sheath now being worn. And, added years to the human's life expectancy and life span will permit a more leisurely and less frantic exploration of the paranormal realms. In short, here is an opportunity for all concerned parties to achieve their desires for greater authority in their personalized and individualized quests by becoming cooperators with each other instead of adversaries.

Now I realize that this may sound utopian, but the human race has been preparing for this ever since recorded history began. The finiteness and the biological fragility of the human is the subject of every serious inquiry into the human condition, regardless of the discipline involved. Only now, at this juncture in human development, have enough elements of evolution come together to allow for the human to take control of the evolutionary thrust.

Besides the scientific advances with their attendant cross-fertilization made possible almost instantaneously by virtue of modern communication and computer networks, there are several less dramatic but equally powerful forces at work. These have to do with the explosive population growth which gives humanity more reasons to take charge of its biological destiny.

While granting that an increased population has several negative side effects in many countries, especially where infrastructures are lacking, these very negative pressures are causing advances to be made on a global scale. No longer are catastrophes confined to the specific locale in which they occur. By virtue of instant awareness of such events, and by virtue of the number of people prepared to concern themselves with the needs of others, a global ethic then puts pressure upon the governments to act and the government, in turn, leads to developments aimed at mitigating or eliminating the causes. From this evolves changes in human attitudes towards the human condition and additional steps are taken to mitigate the problems inherent in our existing on this planet as human beings.

In the meantime, in the more affluent nations, there is a large buildup of individuals who are well beyond the magic figure of 65, into their 80's and 90's. Many of them are in good health and eager to be active in society thereby changing the stereotype of the elderly. This pool of active minds puts pressure on all other segments of the society, thereby adding to the evolutionary pressure being placed on humans for additional changes.²⁴

Thus, without going into exhaustive detail, an "evolutionary loop" is developing rapidly. As life expectancy increases, it will be expected that the body becomes more valuable in terms of durability. This is where medical science and AI converge and this is where those of us concerned with religion and psychical research also converge since we will be enhancing our own physical capabilities to endure while exploring the paranormal realms.

Once we humans start taking conscious control of our own minds and start undoing the restrictions that have been placed upon us by virtue of our past evolutionary history--what metaphysicians call "race consciousness"--we will be on our way to becoming co-creators of the successor species to homo sapiens. The good news is that we will also be members of this successor species, as long as we take charge of our future today and do not wait for tomorrow.

In closing this presentation, I would like to provide additional statements from various points of view, all of which converge on the central theme I have presented: that while the past has been the evolutionary prologue of homo sapiens, we stand now in the present possessed of the opportunity to bid farewell to that prologue and to blaze a new evolutionary path to our future as co-creators with the life force that gives us our identity.

Ernest Holmes, developer of Science of Mind and founder of Religious Science:

The time has come in our evolution when we should awake to a recognition that behind each of us stands the eternal Mind...The unfoldment of consciousness has arrived at the place where individuality can realize its own divinity. But it is only as we work in conscious cooperation with the Divine that we awake to reality...Nature has awaited man's discovery of her laws. As he discovers new ones he uses them...Now that Divine Mind has brought the evolution of individuality to a point of self-recognition, It must wait on man's conscious cooperation for further evolution.²⁵

Robert Jastrow, already identified as a leading AI proponent:

In the larger cosmic perspective, going beyond the earth and its biological creatures, the true

attributes of life will be seen to involve intelligence and learning--a response to stimuli, the absorption of information about the world, and flexible response to changing conditions. What this intelligence is housed in becomes unimportant as long as it can stand up to the rigors of its environment.²⁶

Ernest Becker, a Ph.D. in cultural anthropology, a prolific author and winner of the Pulitzer Prize for his book The Denial of Death:

In the mysterious way in which life is given to us in evolution on this planet, it pushes in the direction of its own expansion. As we don't understand it simply because we don't know the purpose of creation; we only feel like straining in ourselves and see it thrashing others about as they devour each other. Life seeks to expand in an unknown direction for unknown reasons. Not even psychology should meddle with this sacrosanct vitality...²⁷

Osborn Segerberg, Jr., an honors graduate from Brown University in English, has worked with all forms of media, radio, and television, while writing for several publications; this quote is from The Immortality Factor:

Evolution proceeded biologically until the human brain reached its present dimensions. Since then evolution has occurred along cultural lines. The coming decision is both social and biological. We can consciously influence what direction we take, but in order to do so we must exercise our option to decide. There will be little likelihood of rescinding the decision once made: evolution goes only one way, down the selected road.²⁸

Alan Harrington, a journalist and public relations executive, as well as an author of both fiction and non-fiction. This quote is from his book The Immortalist:

Death is an imposition on the human race, and no longer acceptable. Man has all but lost his ability to accommodate himself to personal extinction: he must now proceed physically to overcome it. In short, to kill death: to put an end to his own mortality as a certain consequence of being born.²⁹

¹Webster's Ninth New Collegiate Dictionary. Marvin Minsky in The Society of Mind (New York, NY: Simon and Schuster, 1986) defines "artificial Intelligence" as: The field of research concerned with making machines do things that people consider to require intelligence.

There is no clear boundary between psychology and Artificial Intelligence because the brain is a kind of machine."

²Huyghe, Patrick, "Retooling the Human Machine." Longevity. March, 1988. pp. 49-51.

³Ibid., p. 49. Also, Lerner, Eric J., "Robotics: The Birth of Vision." Science Digest. July, 1985. pp. 30 and 32.

⁴Deken, Joseph, Silicon Sapiens: The Fundamentals and Future of Robots. New York, NY: Bantam, 1986. pp. 4-7.

⁵New York Times. March 27, 1990.

⁶Ibid., March 28, 1990.

⁷Ibid., March 29, 1990. Editorial.

⁸Deken, Op. Cit., Chapter I.

⁹Turkle, Sherry, The Second Self: Computers and the Human Spirit. New York, NY: Simon and Schuster, 1984. Introduction.

¹⁰Lerner, Op. Cit., pp. 30 and 33.

¹¹Turkle, Op. Cit., p. 16 and 13.

¹²Jastrow, Robert, The Enchanted Loom: Mind in the Universe. New York, Simon and Schuster, 1981. pp. 138, 140, and 142.

¹³Minsky, Marvin. Whole Earth Review. Summer, 1989. p. 37.

The concept of "downloading" is discussed in practically every serious discussion of AI and the weakness of the human biological structure. The idea is that eventually the scientists will be able to digitalize the functions of the brain and, once this is accomplished, this information can be "transferred" from vehicle or program to vehicle or program. This is rather dramatically described by Jastrow in The Enchanted Loom (page 166) as follows:

...Looking at these electrical records, the scientists can tell something about the thoughts and feelings in a person's mind, and the impressions that are passing into his memory.

These are small steps, but they establish a direction. If scientists can decipher a few of the brain's signals today, they should be able to decipher more signals tomorrow. Eventually, they will be able to read a person's mind.

When the brain sciences reach this point, a bold scientist will be able to tap the contents of his mind and transfer them into the metallic lattices of a computer. Because mind is the essence of being, it can be said that he now dwells in it.

At last the human brain, ensconced in a computer, has been liberated from the weakness of the mortal flesh. Connected to cameras, instruments and engine controls, the brain sees, feels, and responds to stimuli. It is in control of its own destiny. The

machine is its body; it is the machine's mind. The union of mind and machine has created a new form of existence, as well designed for life in the future as man is designed for life on the African savanna.

¹⁴Hofstadter, Douglas R. and Dennett, Daniel C. The Mind's I. New York, NY: Basic Books, 1981. First quotation: p. 282. Hofstadter D.R., Godel, Escher, Bach: An Eternal Golden Braid. New York, NY: Vintage Books, 1980. Second quotation: page 26.

¹⁵Lerner, Eric J., Op Cit., 76.

¹⁶Deken, Op. Cit., p. 2-3.

¹⁷Penrose, Roger, The Emperor's New Mind: Concerning Computers, Minds and the Laws of Physics. Oxford, Eng.: Oxford University Press, 1989. p. vii.

The use of "strong AI" and "weak AI" developed out of writings by John R. Searle, a strong opponent of the idea that computers and robots will become intelligent beings. Penrose builds on Searle's argument. Searle's position is as follows:

What psychological and philosophical significance should we attach to recent effort at computer simulations of human cognitive capacities. In answering this question I find it useful to distinguish what I will call "strong" AI from "weak" or "cautious" AI...According to weak AI, the principal value of the computer in the study of the mind is that it gives us a very powerful tool. For example, it enables us to formulate and test hypotheses in a more rigorous and precise fashion. But according to strong AI, the computer is not merely a tool in the study of the mind. Rather, the appropriately programmed computer really is a mind, in the sense that computers given the right programs can be literally said to understand and have other cognitive states. In strong AI, because the programmed computer has cognitive states, the programs are not mere tools that enable us to test psychological explanations; rather the programs are themselves the explanations. (Searle, John R., "Minds, Brains, and Programs" from The Behavioral and Brain Sciences. Vol. 3., New York, NY: Cambridge University Press, 1980.

¹⁸Freedman, David H., "Common Sense and the Computer." Discover, August, 1990. pp. 65ff.

¹⁹bid., p. 70-71.

²⁰Minsky, Marvin, The Society of Mind. Op. Cit., p. 22.

²¹LeShan, Lawrence, The Medium, The Mystic, and The Physicist. New York, NY: Ballantine Books, 1966. pp. 3 and 4.

²²Dobzhansky, Theodosius, The Biology of Ultimate Concern. New York, NY: Meridian Books, 1969. pp. 77-78.

²³Friedman, Maurice, To Deny Our Nothingness. New York, NY: Dell, 1967. pp. 358-359.

²⁴For a discussion of this topic see Jerry Gerber, Janet Wolff, Walter Klores, and Gene Brown, The Future of Baby Boomers and Other Aging Americans. New York, NY: Macmillan, 1990.

²⁵Holmes, Ernest, "Know Yourself." Science of Mind Magazine. June 1987. pp. 74-75.

²⁶Jastrow, Op. Cit., pp. 160-161.

²⁷Becker, Ernest, The Denial of Death. New York, NY: The Free Press, 1973. p. 284.

²⁸Segerberg Jr., Osborn, The Immortality Factor. New York, NY: Dutton, 1974. p. 252.

²⁹Harrington, Alan, The Immortalist. New York, NY: Random House, 1969. p. 3.

The concepts of longevity, immortality, bypassing death, and "downloading" of a human personality into an indestructable body is no longer the domain of science fiction or those fearing death from the traditional psychological point of view. As medical science, biology, physics, cybernetics, and the other sciences attack the human body's conditions and frailties, death is being treated more as a disease to be conquered than a terminal condition for which there is no remedy.

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RESPONSE TO ALEXANDER J. NADER

Paul Pond

Part I

God is watching from our hearts;
the Knower -- knows us by each part.
We must examine this point of view
to understand what created me and you.

An all pervading intelligent energy
rules the universe without impunity.
Although science does not recognize it yet,
the time for its discovery is almost set.

This intelligence -- Prana -- is more than electrical;
it is best to consider it somewhat eclectic.
Subtle essence drawn by the network of nerves
contributes to the pranic spectrum we deserve.

This energy of life we cannot manipulate
in any way we randomly stipulate.
Science must allow intelligence in its domain,
or else hopelessly lost it will forever remain.

Application of the human mind
has led to marvelous discoveries of every kind.
Those who would disagree with this theory,
just don't know their human history.

All our concepts, right or wrong,
are products of mental song.
Sung in rhyme and brief refrain,
into a hidden chamber of the human brain.

Our daily lives are filled with many a clue,
that consciousness exists, independent of me and you.
The benzene ring would not be known today
if the dream had not come to Kekule.

Artificial Intelligence, weak or strong,
as an important concept won't last too long,
unless research finds time to stop and think
what is responsible for Darwin's "missing link."

The brain is like a computer, scientists maintain.
But from making the wrong assumption they must refrain.
The living electricity that powers the neurons
contains more than just fast moving electrons.

The unaccounted for mental processes
of creativity, genius, and psychosis,
should provide to us proof enough
that we don't understand the brain's wonderful stuff.

To attribute the creation of music, science, and art
to the electrical discharge across a synaptic part
evades the basic question of our creation
while equating mind to a radio station.

Radio waves ethics and morals do not contain.
Yet these values lift humans above the animal plain.
Research will make a stupendous mistake,
if the cause of ethics and morals it does forsake.

The energy of sex
for humans has dual effects.
One is to procreate through love's play;
the other is to create in a mental way.

Save some precious seed for the brain's evolution.
For excessive sex can cause a dilution
of the subtle reproductive essences
whose retention is needed for healthy consequences.

If our creative seed we constantly expel,
in a state of mental turmoil we will dwell.
All of us must show enough restraint
so that after our activity we don't feel faint.

Control of our sexual passion
must become the current fashion.
Our brain and nerves need this energy in reserve
to attain the evolutionary goal we deserve.

"All men are created equal"
is in need of a current sequel.
This truth applied to only one gender
its correct meaning will never render.

Men from the Greek "manos" is derived.
For the meaning of this scripture to survive,
"Man" means thinker we must know
and not which sex should steal the show.

Into different circumstances all are born,
so life's dramatic stage we can adorn.
With the experience gained in this scheme,
the soul strengthens itself through each scene.

The potential to know our creator
is available to all sooner or later.
Disciplines of the mind we must use
for our evolutionary privilege not to lose.

Our cosmic potential with patience can be reached,
if we follow the tenets of all religions preached.
If you give some effort to charity,
your inner light will glow with clarity.

Respect for the sincere at heart
is a very good place in which to start.

Response to Alexander J. Nader

The barrier of prejudice must also be broken
if spiritual love is to be more than token.

Honest work to earn your daily bread
is necessary until the body is dead.
Living off your neighbor's labor
Will guarantee evolutionary disfavor.

We all must live a lifestyle healthy
so the inner world gained will be wealthy.
Add to this mind given its rightful place
And you have self-realization for the entire race.

Our evolutionary impulse must be fulfilled
in the way that Nature has willed.
The proper environment is necessary for healthy evolution.
Without it, we will face constant revolution.

We must decide which mode of life is right.
Is it better to pacify or go out and fight?
The rush after armaments shows evolution is distorted
We must control our senses before the process is aborted.

The religious scripture of all lands
contains the core of nature's plans.
All of us must lead a spiritual life.
It's the only way to avoid mental strife.

When man for wealth and fame his spirit will sell,
nature reacts and creates his own living hell.
In this way distortion of the human mind
can lead to the ruin of all humankind.

How are our children coping
with the pollutants we are hoping
will simply vanish and disappear
if we pretend not to see or hear?

The after effects of disaster of Chernobyl,
spreading far and wide could soon be global.
Irradiated children mysteriously losing their hair,
to wonder what tortures face them they do not dare.

The children of Upper Silesia face a horrendous plight
and modern technology is helpless to make it right.
Birth defects have condemned them to a life so mute
Even the silent scream of "Guernica" its horror does not
suit.

Our children can show us the way,
if only we'll listen to what they say.
Today's youth on a world-wide rampage,
draws attention to evolution's need at this stage.

We must re-examine society's structure
to ensure the evolutionary process we do not rupture.
All people need food, clothing, comfort, and health
so that they can discover their inner wealth.

The inner workings of the human mind
provide a research tool of a kind
that must be used to probe the mystery
of how we began this human history.

Science and religion must cease to fight
over whose position is really right.
Both must realize that neither can be correct
until they understand Nature's intelligent aspect.

God is watching from our hearts.
We must live right and so our part
to find the Wonder that life does contain:
The Cosmic potential within the human brain.

PART II

THE WONDER THAT LIFE CONTAINS.

Mental Application. All the achievements in the scientific and artistic realms can be credited to application of the mind or concentration. It is by mental application that we solve problems, probe the unknown and achieve goals that we set for ourselves. During the last two decades the medical profession has also come to recognize the role played by our mental attitudes on the healing processes. More recently scientists from other fields have called for the study of consciousness within science in order to admit the impact of mental phenomena on the scientific process.¹

It is our ability to apply the mind to a certain problem and thereby gain an understanding of it that distinguishes the human mind/brain complex from other animate forms of life. All animals eat, sleep, drink, reproduce, and communicate in some way. Some even have the ability to use tools, do work, and solve problems in a limited way. But it is the human mind that can gain an "understanding," abstract it, and make a further application that sets us aside from the rest of the animal kingdom.

Yet with all the importance we attribute to the mind, we are currently at a loss to explain how it works and to understand the extraordinary states of consciousness of creativity, genius, mystical experience, and psychosis. Simply put, there is no acceptable theory of mind from a scientific or metaphysical point of view.

The Mind, Evolution, and Kundalini. Eastern esoteric theory suggests that there is a psychophysiological mechanism known as Kundalini--in human beings. Traditionally Kundalini is held to be responsible for creativity, inspiration, genius, mystical experience, psychic phenomena, and, in its morbid form, certain types of mental illness. The Kundalini hypothesis suggests that human evolution has proceeded by the action of this mechanism in the human body and brain.² This hypothesis further asserts that application of

the mind or concentration can trigger this mechanism into activity and that Kundalini is the mechanism by which evolution proceeds.

Kundalini is held to be responsible for mystical experience. Yoga theory holds that via concentration (meditation) an individual may speed up the natural evolutionary process by activating Kundalini and achieving "union with God" (Cosmic consciousness). In this sense expansion of the individual mind into other realms is possible and knowledge of the universe is gained through channels not accessible to the intellect. Yoga theory depends upon the existence of an intelligent life energy (Prana) interacting with the human brain and nervous system.

The disciplines of yoga were developed as a systematic way to verify supernal truths and to properly prepare the human body and brain for mystical experience. From this point of view human evolution is proceeding to the predetermined target of cosmic consciousness. It is this experience of expanded consciousness that has been shared by all great mystics and consequently forms the cornerstone of all traditional religions. The concept of a predetermined evolutionary target directly contradicts the currently accepted notion that evolution has proceeded by random mutation.

Linking mystical experience to evolution provides religious teachings with a fundamental rule in human life. The basic tenets of faith become guidelines for the healthy evolution of the race. Religious scriptures when properly understood provide immutable rules for us to live by and insure a healthy continuance of the race.

Research on AI. The advent of the computer has without doubt helped to create a technological revolution during the last four decades. Certainly all facets of our lives at home, work, and play have been affected by computer technology. Scientists are now developing the field of AI which is defined as "the capability of a machine to imitate intelligent human behavior."³

The position of AI researchers is that the brain/mind behaves exactly like a computer. The brain/mind executes a particular program just like a computer executes several stored programs. Mind is built from programming. So that understanding mind means understanding structure and sub-routines. The implication is that the living biology of body/brain becomes irrelevant.⁴

The study of AI has led to all kinds of speculation about what can be done with "thinking machines." Can they really think in the human sense and be creative too? Is it possible to create artificial incorporeal intelligence that could be transferred from one body unit to another body unit? There is already talk of a "post biological future" in which the contents of human brains could be scanned into other machinery. Finally, statements are being made concerning our ability to create our successor species.⁴ Al-

though I have my doubts about many of these speculations, I would encourage the study of AI with full vigor. But in conducting this study I would suggest we keep a few basic points in mind.

First, proper study of AI needs a better understanding of human intelligence and how the mind works. Research into this field has been outlined elsewhere.⁵ I would only like to comment that it seems extraordinary that we could build a better artificial mind/brain without understanding the original (real) one first.

Second, science needs to keep its own achievements in perspective. Are all these wonders of technology meant to be means to an end or ends in themselves? I believe that the former is the case although we currently take the latter to be so. From a spiritual perspective, our modern conveniences afford us the time, comfort, and environment for proper self-understanding. As a race we need to determine the proper goal of life.

Third, the study of AI will cause the scientific and academic communities to focus on a number of questions. What qualities make us human? Is it our morals, ethics, or just our intelligence? Where do creative ideas come from? What energy really "programs" the human brain and is responsible for mind? The answers to these questions will determine how far AI research will progress.

In the end, I believe we will come to a startling realization--that for thousands of years we have been creating our own successor species all along.

Human evolution involves the mind, brain, and nervous system. I believe the mechanism of Kundalini provides the key to this process. The mode of life described in the basic tenets of all religions along with the disciplines of Yoga provide the rules that must be followed for a healthy evolution of the species. As self-conscious beings we must consciously participate in our evolutionary process. Otherwise disaster awaits us. We need only to view current world conditions to give us a small idea of the horrors that await the human race if we fail to properly evolve. Can we really be so shortsighted as to believe that a universe that has produced an intelligent life form like the human being has no intelligence unto itself? That it has evolved solely by random mutation? And what's more: that life giving Nature has no plan or goal for her prize species? Can we really believe that universal intelligence (God) has no recourse to keep us on the true path if It so chooses?

Yes! Homo Sapiens is creating its own successor species. Just look at what we have achieved so far!

¹The Study of Consciousness within Science. San Francisco, CA: The Bhaktivedanta Institute, 1990. In the Proceedings which are to be published.

²Gopi Kirshna, Kundalini: The Evolutionary Energy in Man. Boston, MA: Shambhala, 1967

³Webster's Ninth New Collegiate Dictionary. Springfield, MA: Merriam-Webster, 1985

⁴Alexander Nader, "Homo Sapiens is Creating His Own Successor Species." Proceedings of the Sixteenth Annual Conference of ARPR. Bloomfield, MA: The Academy of Religion and Psychical Research, 1992

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"AI:" CRISIS, CHALLENGE, AND OPPORTUNITY

Mary Carman Rose

Derived initially from a growing interest in "computer culture," "AI" has come to have a variety of meanings which are surveyed briefly. An attempt to restructure the human spirit along the lines suggested by any form of "AI" has inherent in it dangers arising from attempted dominance of some individuals over others with regimentation and loss of freedom of choice. The approach to the question of future development of the human spirit through commitment to specific moral/spiritual capacities which we already possess will go a long way toward ensuring the future well-being of the human spirit.

I: A.I. as area of inquiry. Perhaps initially "artificial intelligence" or "A.I." derived from a widespread three-fold interest in the ways in which the working of the human spirit¹ resembles that of a computer; in the feasibility of using (what we may call) the "categories" in terms of which we must understand the computer to comprehend the human spirit; and the possibility of modifying the human spirit through consistent sustained interpretation of it by means of these categories and only these. In some, and perhaps most, contexts AI still means these three elements.²

But in the context of the program for this conference we have a very striking and, I suggest, challenging expansion of the meaning of "AI." For now we are faced with a new area of inquiry: that in which we study the possibility that through human efforts we will be able to modify the human spirit.³ Within this area of inquiry, the computer-based concept of AI takes its place as one of several programs or visions concerning the possible future of the human spirit and the possible roles in that future of some type of human manipulation of the spirit. This is not yet a formally organized or widely emphasized area for research, and an attempt at analysis of its possible content will be helpful here.

II: Analysis of AI as area of inquiry. If we interpret AI as naming a new area of inquiry, then any one who chooses to work in this area could survey the suggestions for modification of the human spirit; work out plans for such modification; assess one or more of the already existing plans; challenge the feasibility of the attempt to modify the human spirit; or challenge the wisdom of such attempts. In any event, in this new area we are dealing with at least 7 variables. That is, there are at least seven aspects of any one plan for modification of the human spirit which vary from project to project. I will introduce each of these variables in general terms and in the form of questions to which any one plan will provide its own answers.

(1) What are the goals of a particular plan--i.e., what changes in the human spirit will those who work with it attempt to bring about?

(2) Who will benefit from these changes? Are there any who will suffer if the project succeeds? Any who will be left unchanged? If there are any who will suffer or be left unchanged what provision is made for them and does this possibility invalidate the project?

3. Is the AI project for the modification of the human mind grounded in a view of man and/or of reality? If it is so grounded, what is the investigative basis of that view and how can it be assessed? If it is not grounded in a view of man and/or reality, how can it be assessed as to its presuppositions concerning the human nature it will work with or the reality in which the project will be developed?

4. What are the means by which the project will be carried out? How will they be assessed? Who will monitor the project? What are the spiritual and intellectual requirements for carrying out the project or for assessing it?

5. Is this work to be solely the intention of the persons who try to bring about the prescribed changes in man? Or is there in man and/or in reality an evolutionary process which will bring about the changes in the human spirit? In the latter case what is the role of human efforts in bringing about these changes?

6. How will the proposed changes affect human freedom? The spiritual and intellectual diversity among humans? The view that every human being has intrinsic value?

7. Are there generally accepted beliefs concerning man or reality which any AI project ought not to deny? If any AI project does in fact deny them how sound--e.g., philosophically, theologically, spiritually, and scientifically sound--is this denial?

III: Some aspects of particular projects which urge hope for modification of the human spirit. I will examine briefly a few aspects of the work of seven thinkers who have proposed that we look forward to changes in the human spirit: George William Frederick Hegel (1770-1831)⁴, Karl Marx (1818-1883)⁵, John Dewey (1859-1952)⁶, Samuel Alexander (1859-1938)⁷, Henri Bergson (1859-1941)⁸, Aurobindo Ghose (1872-1950)⁹, and Pierre Teilhard de Chardin (1881-1956)¹⁰. Of these thinkers all but Dewey propose that there is a type of evolutionary process which in part through human instrumentality will bring about significant and desirable changes in the human spirit. I will discuss (1) problems of interpretation of these projects and problems presented by the diversity among them; (2) some weaknesses in them; (3) some of the strengths to be found in them.

(1) In attempts to understand these projects there are the following difficulties: there are ambiguities in the articulation the author has used; the developmental aspect of the author's creativity; and the diversifications which the project undergoes through its several interpreters.

In each of these systems problems with language include unclarity as to what a passage means; misunderstanding which arises when a familiar term is given a novel meaning in the context of any one author's writings; or in different parts of the work the making what seem to be opposed statements about a particular topic. I introduce here only one example: the word "God" has very different meanings in the work of each of these thinkers.

Thus, "God" in Hegel's metaphysics is the non-personal absolute, which undergoes a development that reaches its fulfillment in man and which, still developing, will next (at least according to some interpretations) achieve the supraperson of the ideal state in which alone humans will find their fulfillment, not as individuals, but as finding their sole value in their function in the state. For Dewey and for Alexander "God" pertains to human ideals: for Dewey "God" names human ideals to be worked toward and perhaps achieved by the humans who first brought them into being and who, having achieved them, may create new ideals; while for Alexander, "God" or "Deity" names the humans of the future in whose spirit an evolutionary process will have developed novel capacities for appreciation and realization of value.

For Teilhard, God is the "omega point," a personal being in whom resides the ground of all genuine values and goods of the human spirit. Again, for Teilhard, human spiritual development will eventuate in a human analogue of divine goodness. Bergson's perspective on reality which developed along with his personal spirituality and understanding of the meaning of human life, is centered finally on the importance of the transcendent God. That this was the end toward which Bergson's creative efforts were moving became increasing clear during the years he was writing. And this means that in his writing the meaning of the word "God" changes as Bergson's spiritual development moved toward its fulfillment in what may have been his acceptance of Western transcendent theism. This also means that "God" has several meanings in Bergson's complete creativity. Finally, it has been suggested in some Marxist circles that the language and even the beliefs of Western monotheism could be maintained in a Marxist context provided we interpret these beliefs as mythological expressions of complex, sophisticated forms of materialism and its atheism.¹¹

(2) Shared weaknesses in the foregoing systems. Considering the great import of any plan to modify the human spirit, it is important to note the following two weaknesses shared by the foregoing positions. (a) I suggest that relative to the goals of these plans, the diversity among them is to be seen as a weakness. For this diversity means that

there is no one project for modification of the human spirit that is universally recognized as the best and hence as a desideratum for reflection on the possible future of man. Any view that is chosen for this role would represent a dominance of "some thinkers over all persons"¹² (b) The obvious diversity here means that each thinker has looked at the possibility of modifying the human spirit from a particular perspective which, on the one hand, is determined by his vision of human achievement and his hope for the future and, on the other hand, by the content in his day of theology, science, studies in comparative religion, and philosophy. Given these limitations on each thinker and the diversity among their views, perhaps all who are interested in some project of modification of the human spirit should see themselves as required by investigative standards to ask whether their perspective needs supplementation, correction, or development by incorporation in it of what others have said on that topic.

Suggested Weaknesses in Individual Positions. Students of the foregoing instances of creativity pertaining to the modification of the human spirit who attempt to spot weaknesses in the work of each thinker will differ among themselves. For any one of these views some thinkers will find virtually nothing to criticize. Others will be able to find nothing of value in a particular view, and some may want to reject all these views and their suggestions about the future of man. But perhaps most critics will find something to criticize in most of them but will not wish to reject the whole. I am in the last category in respect to the usefulness of all the foregoing suggestions concerning the modification of the human spirit, and I suggest that if any one of them were to be used for this purpose the following would need to be noted.

Teilhard de Chardin sometimes finds in matter an impediment to the realization of spiritual values; and of course an individual might get "hung up" on material pleasures and goods, but this is a perversion of our relation to the matter that is absolutely essential to our embodiment, to our well-being, and to our use of our spiritual and intellectual gifts and achievements. Again, I suggest that to read Bergson with discernment is to appreciate the sincerity of this thinker who, in his reflection was not only successfully and ingeniously criticizing the dominance of materialism in his day, but was also solving his own personal problems concerning what as a human being he may hope to become and how he may legitimately think of himself. But the fact that, as I have indicated above, Bergson's thought developed during all his creative years--and to the very end of his life, makes it difficult to appeal to Bergson for any specific view of man and reality on which to base a project pertaining to the future of the human spirit.

Hegel's work is infused with an emphasis on the "state," which some Hegelians called the "supraperson." On this view the individual finds not only his fulfillment but his raison d'être in his relation to the state rather than

in his being qua individual. This has sometimes been an element in Hegel's thought making for totalitarianism. From my point of view, the explicit naturalism and materialism of Marx over-rides any other judgment of value that might be made of Marx's thought. His materialism means atheism and no survival of physical death, two beliefs which are contrary to the convictions of many persons whose preferences for what they wish to become or hope that the human race will become would be totally over-ruled by a program of modification of the human spirit grounded in Marxism. In recent years there has been a rapprochement between Marxism and Dewey's pragmatism. (The pragmatism of Dewey is sometimes known as "instrumentalism.") Of course, one need not find in instrumentalism the same basic roles in our culture of our economic practices as one finds this emphasis in Marx. But my own negative judgment is that many of the spiritual and intellectual inadequacies and lack of realism concerning human *de facto* and perhaps legitimate or even necessary human aspirations are found in both views. Finally, I suggest that the twentieth century Hinduism of Aurobindo shares with earlier Hinduism important ambiguities as to the rationale for asserting that the Absolute actively supports, guides, and descends into the aspiring spiritually and intellectually needy person. A corollary of this is that there is in Aurobindo, who has been very much influenced by 20th century Western philosophy and science, an ambiguity concerning the relation between the Christian concepts of grace, redemption, and justification and Aurobindo's "Absolute" and also concerning the relation between the "transcendent reality" of which Aurobindo speaks and the personal transcendent God of the Judeo-Christian tradition. My concern in this last is that the lack of clarity on these issues can work against the maximum effectiveness of both 20th century Hinduism and Christianity.

Individual strengths of these views. Obviously, the judgments concerning whatever of positive value is possessed by each of the views with which we are concerned here will also vary from thinker to thinker. Yet concerning these positive judgments of value an additional comment is not only appropriate but very important. As academicians we are not often encouraged to seek the strengths as well as weaknesses in the positions we critique. I suggest, however, that in respect to a hope for modification of the human spirit whatever project we are interested in after a survey of possible philosophical bases for our further inquiry and creativity, we will do well not only to reject what we find inadequate in any one view but also to salvage whatever of value we find in the instances of creativity that we consult. A proposal of the thinkers that we are considering here, I suggest the following. Again, these are of course my preferences and derived from my personal convictions. Others will want to assess the systems in other ways. And course, we need as many points of view as are available.

Teilhard sees the goal of evolution as the Omega point which is the transcendent divine nature from which derives our knowledge of the richness of the concept of the human

capacity for love and the power of that love to enrich not only human relations but the intellect as well. Also, paradoxically perhaps, given Teilhard's reflections on matter, he often celebrates man's relation to nature. Hegel is one of the really thorough-going system makers of Western thought. He intended that all human concerns and experiences would find a place in his system. Thus, in his own way, he has already aided us in encouraging us to ask what each kind of flowering of the human spirit adds to the whole. This is not to say that we need to accept his answer, but rather that we have already learned from him that if we modify the human spirit we may lose something essential to the whole panorama of human concerns, loves, and capacities for achievement.

Bergson's Two Sources of Morality and Religion is invaluable for our concern with AI. He argues that, on the one hand, within any culture there is that which is already believed concerning religion and morality; but that, on the other hand, there can come into any one culture the prophetic, intuitive experience of the spiritual leader who sees deeply into the human spirit and brings new teaching into that milieu. Ambiguities and incompletenesses in Bergson's thought are more than adequately offset by the importance of this suggestion which draws attention to the spiritual leader (of whatever religious persuasion) who helps us by giving us new moral and spiritual insights or reinforcing in those we already have.

Marx and Dewey, each in his own way, have called attention to the economic and social conditions needed for the flowering of the human spirit. In addition Dewey calls our attention to the investigative importance of particular situations and areas of inquiry. Applied with caution, this insight of Dewey can protect us against the rigidity of superimposing modes of inquiry to which we consider ourselves committed on areas which may require other, perhaps newly worked out, types of inquiry.

A suggestion concerning proposals for modification of the human spirit. I suggest that the time is not propitious for an attempt to modify human nature. Universally and perennially these attempts have been put forward, and as I have stressed in the foregoing, have differed in their goals, means of realization, and the grounds on which these are based. That is, they all derive from our global situation of diversity and even competition among the many views concerning the human spirit and its relation to reality. Any project carried out now or perhaps in the foreseeable future would do some violence to the wishes and hopes of numerous persons. Yet, we have come to a critical point in our shared life on earth and it is to this consideration that I now turn.

Conclusion. We have been considering a few of the many 18th, 19th, and 20th century views concerning the solving of problems of our shared life on earth by either supporting a hypothetical intrinsic teleology in nature which is aimed at

changing the human spirit or bringing about such a change through human efforts alone. At the present time each one of us is a part of the present diversity concerning possible and desirable changes in the human spirit. Some of us are indifferent to such a project. Others are fearful of any attempt to undertake one of these projects. Some are interested in bringing about such changes of a particular sort. I want now to consider an essential element in our present predicament, whatever hopes or plans any one of us may have to change it. I want to emphasize the necessary importance of the individual human being.¹³ As background for this emphasis I will need to introduce here: (1) the concept of the "individual's relation to himself;"¹⁴ (2) the concept of what I will call "a salutary spiritual path;" (3) the traditional concept of "free will."

Each of us stands in many relations: to other individuals and to communities, from whom we learn something, with whom we contend, whom we love or try to love. Each of us has some understanding of our relation to reality, to moral and spiritual principles, and to our work or vocation. But each of us also stands in another relation more fundamental than these and at least as important to us as they are. I mean the individual's relation to himself into which he enters from time to time to consider what spiritually and intellectually he is becoming and how he relates himself to the moral and spiritual principles that he accepts. Necessarily, any one who reflects on this fundamental relationship, reflects out of his personal experience.

By a salutary spiritual path I mean a way of life, a commitment, that is beneficial to the whole person. I suggest there are, in fact, many salutary paths, but that not all ways of life are salutary. A salutary path is any way of life that teaches the positive values of loyalty, courage, honesty, good will, helpfulness to others, love. I suggest that there is evidence of such a path in all the great world religions and in many prescriptions for the living of life which we do not ordinarily think of as religions. I suggest also that to be committed to a salutary path is to find ample personal reasons for accepting it, in fact for loving it, although these personal reasons may not persuade others who may find the values I have mentioned in a very different path. Further, any salutary path assumes the human capacity for free will--i.e., for facing an open future with the determination to make a decision which will be in accordance with the ideals fostered by the spiritual path to which one is committed.

As one individual, then, I must think personally about the decisions I will make concerning the subject of this conference. I must be willing to become acquainted with the various proposals concerning modification of the human spirit; to identify in any one of them what I believe is not a desideratum; and to salvage in any one of them what I believe to be of value. I must also be willing speak out against any distortion of my own spiritual path and its expectations for the future of man and any modification of

the human spirit which would destroy the ground of those expectations. At the same time, whatever I might think of the feasibility of changing human nature, I must be willing to use my education, experience, and savoir faire to help ameliorate predicaments which harm humans or, in fact, any sentient life.

Concerning current desires to modify the human spirit, I must also reflect on the ancient, universal, perennial essentialist/nominalist controversy. As I use these terms here, "essentialism" is a 20th century name for the view that there is a human essence, which in part means that there is a shared human nature in respect to values and to spiritual and intellectual capacities. "Nominalism" is, in part, the view that there is no shared human nature and our individual differences are all important while our resemblances are incidental. The concept of the salutary spiritual path presupposes an essentialism, but the important recognition that there are many types of salutary spiritual path gives importance to the differences among us.

The essentialist/nominalist controversy is relevant to most concerns of ARPR and is relevant in a special way at this conference. If we plan for modification of the human spirit (by whatever means) are we thinking in terms of modifying the essence of the human? If so, are we moving toward or away from the fullness of this essence? If not, are we seizing upon a differential, personal interest and concern which only some of us share and perhaps risking the destruction of some or all of what others cherish and hope for? Again, are we moving in a direction opposed to the fullness of human intellectual and spiritual development to which each spiritual path in its own way is committed? As I have suggested, this question is with us at this conference. Attention to it would help ensure use of our capacities for integrity, clarity as to what we are about, and recognition that if some of us get what we believe we want or what all humans should want, we may be sacrificing some human preferences to our own wishes.

I use "human spirit" here to name all aspects of the person--especially the intellect, affective nature, the spirituality, and the character structure.

²Douglas R. Hofstadter, Godel, Escher, Bach: An Eternal Golden Band. New York, NY: Vintage Books, 1979. p.578.

³Since these AI projects envision a great variety of changes in the human spirit, I chose "modification" as a neutral term to encompass all types of proposed changes which are seen as feasible and desirable.

⁴G.W.F. Hegel, Lectures on the Philosophy of Religion. Trans. by E.B. Speirs and J.B. Sanderson. London, 1895.

⁵Sidney Hook, From Hegel to Marx: Studies in the Intellectual Development of Karl Marx. New York, NY: 1950.

⁶John Dewey, Reconstruction in Philosophy. New York, NY: 1950

⁷Samuel Alexander, Space, Time, and Deity. London, Eng.: 1920.

⁸Henri Bergson, The Two Sources of Morality and Religion. Trans. by R.A. Andra and Cloudsley Bereton. London, Eng.: 1935

⁹Aurobindo Ghose, The Life Divine. New York, NY: 1940.

¹⁰Pierre Teilhard de Chardin, The Divine Milieu. Trans. by B. Wall. London, Eng.: 1965.

¹¹This is a very recent development in Marxist thought. See Georges Casalis, Correct Ideas Do Not Fall From the Skies. Maryknoll, NY: Orbis Books, 1984.

¹²C.S. Lewis, The Abolition of Man. New York, NY: Macmillan, 1947.

¹³It is Soren Kierkegaard who explicitly draws our attention to what he called the "category of the individual." See his Dedication to his For Self-Examination.

¹⁴For this concept 19th and 20th century thinkers are indebted to Soren Kierkegaard, Op. Cit. Passim.

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RESPONSE TO MARY CARMAN ROSE

Gertrude Schmeidler

OPPORTUNITIES FOR GOOD AND RISKS OF ILL

Mary Carman Rose has given us a paper which touches with erudition on many profound issues. My discussion will not attempt to comment on all of it, but will be limited to issues she raises that refer specifically to AI.

Let me start with a basic point: we should think of AI as only a new, clever set of tools invented for the computer. It lets us solve difficult problems; it thus increases the scope of the human intellect. Calling it "artificial intelligence" is catchy but it is only a metaphor and it would be misleading if we took it literally. It is rather like calling a screwdriver an artificial finger. We do not think of an airplane wing as an artificial bird's wing. We think of one as flexible and the other as rigid. They function differently. A telephone is not an artificial ear, even though it lets us hear sounds that are far away. AI differs from intelligence.

Turn now to the first of Mary Rose's major concerns: whether AI can modify the human spirit. In one sense it surely can: it brings within our research some goals that we could not attain without it. Its speed, complexity, and precision enlarge our research. They let us plan more broadly and thus extend the human spirit. Hopes that would otherwise be only idle dreams become practical if we use this new tool.

There is a related extension that I will mention only briefly: AI can develop the implications of our ideas. Given a new approach to some body of information, the programs of AI show us how our new model would function. AI thus lets us discard fallacious ideas more quickly, and it helps us develop in more detail the ones that seem fruitful.

Another of its important uses is that it lets us correct or compensate for some important weaknesses of human minds. I will mention only two, though there are many. One is that in complicated work, we are all too likely to forget some step or some idea that we later realize we should have included. AI, and especially its expert systems, have built-in cues to remind us to remedy such temporary forgetfulness.

A second human defect for which AI can compensate is in one way the consequence of our human reasoning ability. We form conclusions, but a human failing is that we form them too quickly, and we are all prone to do this. Here is an example from psychology. To make a diagnosis, a clinician may ask for a battery of tests, look at the first results and get an idea, then of course look at the others to find if the idea was sound. But in a difficult case, where some data point in a different direction from others, it has been

found that when the clinician happens to see first has more influence than what was seen later. Whatever fits with one's first idea is emphasized; what contradicts it is not. Research showed that clinicians made different diagnoses if they began their survey from different places. This is especially the case when a mass of material is too large for our minds to encompass at once. But AI programs, especially their "neural networks" (another metaphor) can be devised to do the proper weighing and correct for this or other known human weaknesses.

Some diagnostic programs in medicine have already made use of these advantages. Doctors are human, and they too may forget or may jump to conclusions. An expert program reminds them of leads they need to follow up, of remote but important possibilities that they need to examine. It can offer to each physician the combined wisdom of many.

With all these benefits, are there disadvantages of AI? Yes, like any other tool, it can be misused; it can have unfortunate, unforeseen effects; it can fail us after we have begun to depend on it. I will list a few of these, and begin with two you perhaps saw in newspaper headlines.

Major dealers in the stock market, for example those who handle huge pension funds, use complex programs to help decide when to buy or sell. A little while ago, all of their programs gave the same advice: to sell. The result was a catastrophic and unreasonable stock market crash. Selling would have been a wise policy for any one of them, but it was bad advice when it guided so many at the same time. Now that this danger has been identified, it can be remedied by law (or by changing the programs) but it shows how unforeseen and harmful consequences can result from it.

Another set of headlines came after a young man's playfulness inadvertently introduced what computer people metaphorically call a worm or a virus into a computer network. Important activity came to a standstill; some information was lost. This was not a failure of AI, but it lets us see a Pandora's box of ills that can come with reliance on computers: accidental viruses, malicious ones, intrusions on privacy and secrecy, even complete loss of function with electrical failure.

If we generalize from this, we can expect that AI's unique advantage will lead to our depending on it for many enterprises. It in turn depends on its supportive systems. Any system can break down. One of our concerns should be whether there will be adequate backups or cushions to sustain us in temporary failure. We can make an analogy here to an isolated household that depends on another tool, the telephone, and can come to harm if it does not have some back-up system to use if there is a telephone outage.

Turn now to a more basic potential problem. Suppose that one of these expert systems works well. It is not perfect, but it is better than any one person's thinking,

because it represents the compostive thinking of many. Could its success discourage the initiative needed to improve it? Might a generation trained to depend on it accept unthinkingly the postulates built into its program, and not turn attention to the possibility of changing the paradigm?

A related possible disadvantage is that the pool of those who can make the needed advances will shrink. An analogy here is to another set of tools: mechanical looms and sewing machines. They are faster, less laborious, and probably on average put out a better product than most handwork, but the best handwork is better yet. Before the machines, many did handwork; those with special skills could be identified. Now with fewer who work by hand, those who might have been best at it may never attempt it, and their skill not be known. The machines have reduced our knowledge of who can work the best. In medicine, similarly, the potentially finest diagnosticians, capable of new insights, may be uninterested in diagnosis because it is an AI routine. A field may lose the large body of workers from whom the most creative could be drawn.

In summary, you will recognize that though my words are different, I am restating many of the concerns of Mary Rose. Crises from AI's inadequacies have already occurred. Risks of using it include overcomplacency with what is good but ought to be bettered, and its preventing some potentially gifted persons from recognizing their skill. We must anticipate other unforeseen disadvantages. On the other hand, AI offers us great benefits. Like any other useful tool it extends our human abilities. The programs of its expert systems, representing cooperative effort, can lead to goals that could not be achieved without it. Let us hope that its ingenuity will be used with wisdom.

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INTERCONNECTEDNESS: THE GREAT TRUTH OF CONSCIOUSNESS
AND DOES IT INCLUDE COMPUTERS?

Frank C. Tribbe

This paper will show the background of discovery and experimentation that demonstrates the reality, scope, and relationships of human consciousness, especially in the area of artificial intelligence, particularly as concerns the electronic field of computers and computer controlled operations. The complexity of electronic circuitry that is more susceptible to influence by weak fields of human consciousness and the myriad physical/spiritual fields of the human body serves as a scientific basis for confirming the validity of these fields. The activities of psychical phenomena seem closely related to human consciousness, and consequently have been found interrelated in their effect upon electronic equipment.

I. A concept like Artificial Intelligence, which on the face of it seems an internally inconsistent phrase, and a non-sequitur, at the very least tempts and entices one to seek an explanation and a larger context into which it might fit. That larger context is what I seek in this approach.

On May 15, 1990, Neil F. Michelsen, a Life Member of SFFI, made his early transition to the realm of pure spirit. Neil was a pioneer in use of the computer for astrological calculations, and in the 1940s formed the Asto Computing Services in San Diego. His vision revolutionized astrology, and he became a resource for astrologers around the world, assisting them with computer time, special computing programs, calculations, and more than twenty books.

Shortly after his passing, I arranged for polling the ACS staff of about 20 persons re his possible spiritual interaction with their computer operations in the hours just after his death. Sixteen of them responded, of whom ten said that they had no doubt that Neil's spirit just after his death began to play electronic tricks with their computers. One said, "The 'Login-Server' problem began right after NFM's departure." Another commented, "What about all of the 'weirdness' with our equipment and computers after Neil died?" And one claimed, "The day after Neil died my terminal started 'whining.' It had not done that before." Perhaps more perceptively, one said, "I notice that the more we are stressed-out, the more the machines break down. It's as if 'Hector,' the computer, gets stressed, too."--by the presence of Neil's spirit?

These incidents might be attributed to poltergeists (whatever that is)--but they would not be in character--yet they are right in character for Neil: a light-hearted fare-well with a puckish twist. That would have been typical of the Neil I knew.

Interconnectedness: The Great Truth of Consciousness

On Oct.9, 1990, I talked by phone with Marcel Vogel, a near-genius I had known since 1970 when he was a top IBM scientist. In retirement, Marcel owned and operated Psychic Research, Inc. in San Jose. On the phone I told Marcel of my research for this paper, and he agreed to send me a couple of anecdotal accounts of computer glitches where human consciousness, both before and after physical death, had seemingly interacted with his electronic system in weird ways. However, Marcel was a great procrastinator if an item was not at the top of his own agenda, and on February 10, 1991, he died of a heart attack--without having written to me. But Ms. Fauna Madsen of his staff reported to me as follows:

We did have one strange occurrence at Marcel's house the night he passed away. He passed on just after midnight, and in the morning his wife found that the VCR was blinking "12:00 A.M", and for a few days afterward no one could get the power back on that machine. The lab had suspended all operations, so no other machine had the "option" of malfunctioning.

So, I consulted Tom Lough, who, for fifteen years has been teaching teachers how to teach computer operation, from preschool to university level. Tom is now vice president for the Education Division of LEGO International. As to the possibility of such incidents, Tom wrote me:

In terms of mass, the electrons respond to forces much smaller than those needed to influence the role of a die, for example [shades of J.B.Rhine!]. So on the force of it, a small change in electric charge could certainly produce a visible result on a computer screen.

That reaction is wholly consistent with the response I got from Ron Mangravite. To my similar query, he wrote:

I will comment upon the electrical/electronic distinction and my own interpretations. Simply I believe "electrical" is used to describe apparatus which uses electricity to power it, i.e., for light, heat, or to run a motor. "Electronic," on the other hand, includes the existence of circuitry that goes beyond simple switches, such as amplifiers, rectifiers, transistors, and now chips, which are merely mini-manifold combinations of the above. I believe the key to interaction from outside the system lies in the degree of subtle complexity, not because a subtle net work seems more readily disturbed--some chips are capable of working while attached to rockets or explosives--but because the subtler circuits are more capable of being influenced by very weak fields, and contain significant areas of function where there are very minute special gaps. These gaps, part of transistor nature, make subtle electronic circuits

border on quantum-level activity, and at present the general scientific consensus is that while consciousness may extend beyond the realm of quantum mechanical action, it does seem to overlap.

Ultimately, I believe that we will find that the link between consciousness and the body will be found to be "quantum" in nature. Perhaps our "will" dictates, via quantum fields, to the nervous system and unconscious portions of the brain [as to] how our bodily functions are to be regulated for health and mental action. Therefore, the more complex the circuitry we surround ourselves with, the greater will be the accidental interaction, until finally instruments will be deliberately "tuned" in some way to the innate nature of a being.¹ Perhaps like a faithful dog, one day a computer belonging to a deceased being will refuse to operate for another, or keep interjecting editorial comments from the beyond!

In Sept., 1990, Ron, as Chairman of SFFI's Research Committee, presented a report with recommendations for future research on the "Quantum Link," designed to investigate linkages between the glial nervous system and so-called "quantum consciousness" between certain mental states with quantum mechanical implications, which may speak to an assortment of intriguing concepts, including the morphogenic field, spectacular healing, regenerations, the role of the altered-state in healing, and questions of consciousness and prayer involving immortality and a group mind. These researches would include reference to the work of L. E. Eeman on the electrical properties of the aura, and Robert Becker's discovery of a field effect involved in regeneration of limbs--quite an undertaking! Mangrative is satisfied that the glial field has "memory" beyond that stored in the genes.

It is extremely interesting at this point to note that Elmer Green, on behalf of the new energy research society, The ISSSEEM, interviewed Robert O. Becker for the third issue of their Newsletter² and the latter said, "I believe that...the neurological sciences are only looking at half of the brain. They only see the neurons...They are not looking at the glial half...The glial cells are electrically active.

Nor is this just a Mangravite pip-dream. This past year there was created the just-referenced, International Society for the Study of Subtle Energies and Energy Medicine (ISSSEEM), of which I am a member. Later this month it will hold a five day meeting, its first annual conference in Boulder, CO³. Its first president, Elmer Green of Menniger Institute, reports that in its first year the Society has enrolled 1800 members, sent out three issues of a Newsletter, and a 110 page Journal. On the Conference program will be papers on the neurophysics and neuropsychology of human consciousness.

New York researcher-healer-broadcaster Bryce Bond writes me that in his view the spirit-body is pure energy when it leaves the physical body, and when it separates at death is extremely powerful either in the case of "having something to do" or in the case of being unaware of its physical death; oppositely, the released spirit that has a "feeling of being lost" would have negligible effect as an energy, on electric circuitry or otherwise. Those dying with a purpose can use their energy very effectively, especially for communication or to indicate their presence around electronic equipment. "Focused thought-energy is much like a powerful laser beam," said Bond; the absence of bodily limitation or peripheral thoughts gives greater strength of energy than when embodied.

When Bond interviewed Ramone Stevens, author of What Ever Happened to Divine Grace?, he got the feeling that Stevens had not been the real author; that sitting before his computer, Stevens had left his body and another intelligence had done the writing. Such situations, he feels, cause some to believe that "computers take on a life of their own."

II. Was there a correlation that was real and meaningful in the mundane incidents I described above, or was it just a coincidence? I suggest the former, but the rationale, though simple, can be established only by bits and pieces. And computers, I suggest, can never be intelligent but can be influenced by intelligence--mind over matter!

Former astronaut Edgar Mitchell was perhaps the first to coin the word "noetics," as the science of consciousness study; he says, "I define consciousness as that attribute of nature (the Universe) that stores, organizes, and utilizes information...When we began the effort in 1973 [the creation of the Institute of Noetic Sciences] to better understand the nature of consciousness, the word 'consciousness' implied to most people nothing more than being awake. Either people were awake and therefore conscious, or they were not. On or off, awake or not, with nothing in between. The word has seldom applied to animal life other than humans. And certainly it had no meaning or application to other life forms nor to inanimate matter. To suggest that there might be many states of consciousness and that in some sense all of nature was conscious was indeed a strange, way-out notion. ...But in the sense that it organizes and utilizes information to exist and evolve...the universe is exhibiting intelligence and consciousness. The attitude of intelligence can hardly be said to be an epiphenomenon. It is indeed a step beyond and not predicted by the seemingly immutable law of physics."⁴

Which philosophy, of course, is also consistent with the "Gaia concept" of a wholistic, adapting, self-healing earth that was proposed by James Lovelock in the early 1970's.⁵

John White, in his latest book, The Meeting of Science and Spirit⁶ reports Ankara electrical engineer Lawrence Beynam as saying that although the energy in living organisms is weak and unpredictable it can be "refracted, polarized, focused, and combined with other energies" and that it sometimes "has effects similar to magnetism, electricity, heat, and luminous radiation--though it is none of these." Such characteristics, says White, are confirmed by the work of Ivan Sanderson, Harold Putoff, Russell Targ, Leonid Vasiliev, James Neal, and many others, while theory for same has been postulated by Ira Progoff, Oliver Reiser, and Charles Tart, especially.

White calls consciousness "the meeting ground for inner and outer reality--the common denominator of objective scientific knowledge and subjective religio-spiritual experience." He notes that thinking is secondary to consciousness and takes place within it, because we can be aware of our thoughts, and can be without thoughts, as with perceptions. The contents of consciousness include thoughts, perceptions, feelings, ideas, values, beliefs, memories, sensations, physiological processes, etc. And he says emphatically that "state of consciousness can be correlated with states of energy, but they cannot be equated;" consciousness is not energy. Working with energy will not of itself change one's consciousness and bring enlightenment. Energy is, in part, the content of consciousness or that which is perceived; consciousness is that which perceives. Similarly, he observes that God includes consciousness because He includes everything, "but God cannot be defined as anything, even consciousness."

Consciousness--more and more we hear the word, but what is it? William James once wrote, "Our normal waking consciousness...is but one special type of consciousness, while all around it, parted from it by the filmiest of screens, lie potential forms of consciousness entirely different." The concept of consciousness has been adequately discussed in the writings of Robert Ornstein,⁷ Charles Tart⁸, John White,⁹ and Arthur Young.¹⁰

Individual consciousness is at least a blend of mind and spirit, and perhaps sometimes includes will and soul. Universal consciousness is limitless, and certainly is not limited to mankind or to earthlike. Within the philosophy of interconnectedness, the two are merged--limited only by recognition and appropriate utilization. How can consciousness be related to computer glitches? Is artificial intelligence at work there?

Until very recently, consciousness was considered unsuitable for scientific study, but dozens of proofs in the past decade of the lack of limits on human memory have alone shown the need for meaningful study of consciousness.¹¹

Dr. Robert G. Jahn of Princeton University recently told FRNM¹² "We [parapsychologists] search for "gifted subjects" when the search should be for the human spirit. We

settle for demonstration of anomalies when the underlying iceberg is no less than the "Nature of Man"...Established modern science...has aggressively excluded from its purview virtually all subjective, intuitive, and aesthetic factors, thereby throwing the epistemological baby out with the intellectual bathwater, and leaving itself impotent to address any of the host of physical phenomena wherein consciousness plays an active role.

These views were an echo of Dr. K. Ramakrishna Rao's presidential address (of 1990) to the Parapsychological Assn. calling on them to herald a new science of consciousness...[from which] a scientific understanding of psychic phenomena could emerge...[because] consciousness is a fact of nature."¹³ He urged they "join other 'heretical' brain and behavioral scientists who are interested in these margins of awareness that are yet to be translated into the language of science...and to march with Consciousness as our common flag."

Richard Baars' book, A Cognitive Theory of Consciousness¹⁴ attempts to answer some very basic questions, such as: (1) How do we explain the ability to attend to some stimuli and be unaware of others? (2) How do we explain the unconscious processes involved in memory access? (3) Why do we lose conscious awareness of habituated stimuli and automatic skills? (4) Why are we unconscious of so much that what goes into shaping our conscious perceptions and images? (5) Why are we unconscious most of the time of the conceptual context, the presuppositions that form the framework of our thoughts about the world? (6) Does the common idea that we have "conscious control" over our actions have any psychological reality? (7) When we say that "I" am conscious of something, what is the nature of the "I" to which we refer?

I have been a lawyer and a psychical researcher, with an avocational interest in religion--all three, for more than fifty-five years. So, one may ask, What can I know of Artificial Intelligence or of computers? In a technical sense, very little; but in the broader sense, that related to that area of religion and psychical research, perhaps enough to make a meaningful contribution. Included in my forty years of U.S. Government legal work was four years' service on a White House Committee studying scientific and technical information (COSATI) under supervision of the President's Science Advisor. Our government report on Computerized Information Systems, which I helped to write, was also published in 1973 by the worldwide operator, Honeywell Information Systems,¹⁵ as a Special issue of their Computer Journal. Even at that somewhat early date, approximately twenty years ago, we recognized and commented on the term, Artificial Intelligence, which was then usually called computer intelligence.

Within general parameters, there are things that a computer can do, and things that a computer cannot do or that should not happen in computer operations. My paper,

ultimately, relates to those things it cannot do, but does, and to activities that should not happen, but do happen. Operating and servicing personnel usually refer to these, with a shrug, as "glitches" or malfunctions. Parenthetically, I should note that there are two limitations to a computer's operations: it can only manipulate the data it has or can access (the old computer adage of "garbage in-garbage out"); the other limitation is the program--it can only make those manipulations of its data that the program specifies, including those capabilities that were designed into the system. These limitations should be inexorable; but when consciousness intervenes, doubts arise.

When I proposed this paper some two months ago I was told that my intention to explore the function of consciousness would be an irrelevant deviation from the subject of this conference. I disagreed. Things of the sort described at the beginning of my paper and to be amplified later, will happen much more frequently in the future as computers become even more sophisticated; we should understand why such happenings occur and what the real explanation is.

Mr. Nader gives us a dictionary definition of Artificial Intelligence as, "the capacity of a computer to perform operations analogous to learning and decision-making in humans." Of course, the key word, in that definition is "analogous," because an "analogy" is defined as, "A resemblance in some particulars between things otherwise unlike."

And so, we really need to look at the definition of Intelligence, which briefly is "The faculty of understanding; the capacity to know or apprehend; the basic eternal quality of divine Mind; to use one's existing knowledge to meet new situations and to solve new problem; to learn; to foresee problems; to think abstractly; to adjust to one's environment; to use with awareness the mechanism of reasoning."¹⁶ Those key aspects of Intelligence refer to humans--none of them could be applied to computers.

Thus, we are dealing with an internally inconsistent term and, more properly, Artificial Intelligence should be put within quotation-marks, or be called "pseudo-intelligence," And, to further circumscribe "intelligence," we should note that "instinct" in plants and animals is different from intelligence (being defined as "behavior that is mediated by reactions below the conscious level; does not involve reason")--though perhaps some animals have a modest amount of intelligence, dolphins, dogs, and horses come at once to mind.

But, technicalities aside, we need to understand to a limited degree how our universe works with reference to humans and to computers.

III. The reality of subtle energies, beyond those recognized by conventional science, is now being established so certainly that "he who runs may read." Many of these subtle energies emanate from the human body, its brain and

neural system, its mind and consciousness, and much of same can properly be equated with the word "spirit." The data for such conclusions come from leading thinkers whose investigations, research, experiments, theories, speculation, and reports, make for exciting reading and pondering.

Dr. Elmer Green of Menninger Institute has been chairing a four-phase project on Consciousness, psychophysiology, and psycho-physics, which started in 1983 and is projected to be complete in 1992. In an interim report of November, 1990 he provides insight on the first, second, and third phases.¹⁷ Among the assumptions of the project he states (1) that paranormal phenomena may be dependent on the existence of paranormal energy of some kind, but in order to become manifest these forces must be transformed to physical and/or physiological phenomena; for instance, every thought, whatever its origin, involves biological and neurological changes; (2) that physical, physiological, psychological, and parapsychological phenomena, without exception, depend on this transmission of energy of some kind; and (3) that physical and physiological changes, whatever their causation, normal or paranormal, result in electrical and magnetic perturbations of the environment.

In Phase One, Green describes the double-blind experiment running for the nine months that involved seated mediators who were insulated from the ground by glass blocks, and with both magnets and dummy-bars suspended over their heads; the magnets varied, north-up and south-up; the results established experimental differences, including gender differences. Phase Three was also conducted double-blind, using healers and sensitives, and the overhead magnets were ten times stronger than those used in Phase One; intense psychological effects were produced, including anomalous voltage surges in the subjects' bodies on occasion.

Basically, we must begin by reexamining our concept of "Spirit"--and I suggest that spirit is not something out there or in a particular place, or where nothing is. Rather, spirit is everywhere and in everything.

Computers are often compared with the human brain, which is a fair comparison, because the brain is physical only, but the key element is to recognize that non-material mind is the programmer, is eternal, and is an integral part of the universe; moreover, mind controls the body's systems by other techniques as well as by operating the brain. Mechanistic science has always said that mind is only an aspect attribute of brain activity, but in our lifetimes a metaphysical approach has begun to receive significant support. Nobel Laureate Sir. John Eccles says flatly that the mind transcends the brain and he claims to have discovered the precise spot in the supplementary motor area of the brain where the mind interacts with it. He writes:

Mind is a self-conscious entity and is primary--it acts upon the brain. It "scans" and "probes" and "gently influences" the brain in a "selective and

unifying manner," with physical and metaphysical implications...I want to insist that we do have this moral responsibility to work on the brain.¹⁸

Wilder Penfield¹⁹, Fritjof Capra²⁰, and Bob Sample²¹ all have echoed Eccles' view, as has California physician Frank Barr.²² and inventor Arthur Young.²³ Even Science Digest has acknowledged the existence of the "brave...scientists in search of the soul," adding Karl Popper, Eugene Wigner, Brian Josephson, and David Bohm to the list. At mid-twentieth century there was little basis for accepting the reality of spirit, except for belief and personal experience. Much less was there scientific basis for accepting the reality of spirit interacting with matter, even though many more observations of such phenomena by competent persons were beginning to be made public than had been true of earlier decades.²⁴

But in the past forty years a few intrepid scientists have been developing data and theory for such interacting that approach the incontrovertible--and in the two decades just ending, full dawn of the electronic age begins to startle us and boggle the mind with exponential surges that hint of the limitlessness of our consciousness as well.

At M.I.T.'s Media Lab, a Human Interface Project has been set up to study "the physical, sensory, and intellectual space that lies between computers and ourselves," but "vicious glitch demons" and "terrorist gremlins" are frustrating research at every turn. (Smithsonian Magazine, June, 1990)

We have been experientially aware for perhaps a century of the reality of mind-over-matter (from "simple" control of pain, bloodflow, blood pressure, to levitation of objects and of self), and of macro-PK where major psychokinetic effects occur in the presence of, or at a distance from, a psychic person--with or without that person's knowledge or intention, or by the probable act of a spirit force.

However, from World War II until the present, technological advances have been so great that the electrical industries and techniques of the 1920's and 1930's have been in great measure replaced by the electronic field as we see it today, with its high degree of subtle complexity. These subtler circuits are, as Mangravite points out, much more susceptible to influence by the very weak fields such as human consciousness and its multifaceted manifestations, as well as by the human body and its myriad physical/spiritual fields. In addition to the subtle circuits in electronic equipment and operations, miniaturization in chips and other crucial items of necessity involve very minute spatial gaps--so that there may well be an overlap with human consciousness, as noted above, even though the latter generally is assumed to extend beyond the realm of quantum mechanical action.

I propose to show the background of discovery and experimentation that demonstrates the reality, scope, and re-

relationships of human consciousness to our world, and especially to the area of artificial and pseudo-intelligence, particularly as concerns the electronic field of computers and computer-related or controlled operations. The energies and activities of psychical phenomena--to the extent that we can understand or explain them--are closely related to human consciousness, and consequently will be found interrelated with it in their effect upon electronic equipment and operations. It is only by an exhaustive study of human consciousness that we can begin to understand its true relationship to the electronic field.

I expect to show with case histories and anecdotes from various situations how these interactions are continually occurring. Some of these examples are intentionally contrived or are incidental to routine operations. But many are unexplained and unwanted; moreover, most are troublesome, but rarely are the true causes recognized. Most such incidents are labeled as unexplainable anomalies, usually brushed aside as coincidences, or hushed to avoid embarrassment, or worse.

Just as far-sighted physicists are now acknowledging that the scientific observer/experimenter is a part of the formal experiment, soon it must be admitted that people are an integral part of electronic operations either by virtue of their operational involvement, their casual presence, their thoughts and desires, or their emotions.

Dr. Harold Saxon Burr worked forty years in his Yale University laboratory and published dozens of peer-reviewed papers that seem to solidly establish his claim that a cocoon-like, electromagnetic-like "field" begins at conception (for man and animals) which serves as a "pattern" by which the physical body, grows, is repaired, and is provided with replacement cells; these he called "life-fields" or "L-fields." But his later work seemed to suggest that the L-field was not the soul--which he thought he identified later and which perhaps took up occupancy at birth. Moreover, his sound research, in the field as well as in the laboratory, demonstrated that these L-fields are to be found in all life not just human and animal but vegetable and mineral as well.²⁵

Dr. Thelma Moss at UCLA demonstrated the probability of Burr's claims when she made Kirlian photos of freshly-cut tree leaves surrounded by the usual Kirlian corona; when she scissored-off part of the leaf and took another picture, the "phantom" of the missing section showed clearly on the film.²⁶

The evolution-consciousness theory explains how events totally incomprehensible at one level of human consciousness are clearly and obviously perceptibly at higher levels of awareness. This concept has been presented by such eminent thinkers as Henri Bergson, C.G. Jung, Julian Huxley, B.P. Medawar, T. A. Goudge, Teilhard de Chardin, and Erich Kahler. Canadian psychologist R.M. Bucke stated: "The range of

simple consciousness is far less than that of self-consciousness, and the range of cosmic consciousness is far greater than either. The person who has had the cosmic sense for even a few moments only will probably never again descend to the spiritual level of the merely self-conscious man, but will always feel within him the purifying, strengthening, and exalting effect of that divine illumination, and many of those about him will recognize that his spiritual stature is above that of the average man."²⁷

Eccles, Penfield, and their peers conclude that intangible mind controls the brain and body. Burr, Northfield, Moss, Backster, and their Soviet Emulators which Krippner has reported,²⁸ demonstrate that the sun, moon, weather, and influences of mind and of pure spirit affect our physical bodies as well as plant and animal life.

Mangravite, Becker, and others speak of body "energy" but conventional physicists would dispute the use of the word. Similarly, Burr and others speak of electromagnetic-like fields, which term is equally hard to sell. But sometimes "the proof of the pudding..." (you know how the saying goes). The premier radiologist in Sweden, Bjorn Nordenstrom says the human body has the equivalent of electric circuits, and he proves it by running electricity into inoperable, cancerous tumors and thus totally eradicates them. Both his work and his 350-page book²⁹ prove his theory; electricity moves through the blood vessels, he says. It balances the activity of the internal organs, and voltages build and fluctuate in case of injury, infection, or tumor, because it is the very foundation of the healing process in the view of Nordenstrom.³⁰

Marilyn Ferguson writes that "Larry Dossey, author of Recovering the Soul,³¹ joins the company of physicians who have transcended the role of doctor-scientist to become wise, spiritual teachers." Dossey finds that "the consciousness of humankind forms a unity, and that it is immortal and infinite." He shows that our deepest and most elemental selves, when understood, affirm our interconnectedness with the universe and with each other. But exploring the nexus of mysticism, healing, religion, and physics he concludes:

Today the resistance to our inner divinity, of recovering our souls, comes not only from religion but from science as well--and here the Western religions and science have paradoxically become unwitting bedfellows. Both assure us we are frail, weak creatures who are born to suffer, decay, and die...Both hold out the promise of salvation--one offering it in the form of God's redeeming generosity, the other in the form of scientific progress. But both have stripped us of our consciousness and our souls, becoming dark allies in this morbid process.

Dossey also writes, "We are endowed with the godlike characteristics of immortality, omnipresence, and unity. We

contain a god-quality that G.C. Jung called our "omniconsciousness." We must not confuse participation in the Godhead with usurpation of the divine, as religious fundamentalists tend to do."

Dossey quotes the late physicist Erwin Schoedinger, who believes that the western world suffers a massive delusion by assuming that "the mind and consciousness are personal and individual." Schrodinger continues, "We have got used to localizing the conscious personality inside a person's head... [rather], localization of the personality, of the conscious mind, inside the body is only symbolic."

Schroedinger also states that there is a limit to the use of science to explore mind and spirit; that alternative or amendatory thinking will be needed--perhaps by a bit of blood-transfusion from Eastern thought, [but] that will not be easy; we must be aware of blunders--blood transfusions always need great precaution to prevent clotting."

Quantum theorist John Archibald Wheeler tells us we are not "observers" of the world but "participators;" "in some strange sense the universe is a participatory universe." Dostoevsky said he believed, "not in a future eternal life, but in this present eternal life. There are moments--you can reach moments--when time suddenly stops and becomes eternal---Time is not a thing, it's an idea. It will vanish from the mind."

Ken Wilber, writing about Reality as "the One" emphasizes that it is only metaphor, and that spiritual traditions could better express that thought as "non-dual."³² Henry Margenau, professor emeritus of physics and natural philosophy at Yale University, in The Miracle of Existence,³³ wrote not just a book about physics, but a book about God; he concludes that each individual "is part of God." But states this "with hesitation," saying that it is better, perhaps to say, "each of us is Universal Mind, but inflicted with limitations that obscure...its aspects." Einstein once observed, "I feel such a sense of solidarity with all living things that it does not matter to me where the individual begins and ends." More cryptically, Schopenhauer once said, "Man can do what he wills, but he cannot will what he wills."

And then for contrast, Howard Gardener in The Mind's New Science,³⁴ does not even use the word "consciousness" and mentions "mind" only alternatively with brain and a computer!

Dr. Barabara B. Brown reports that her research and experimentation³⁵ were extended to the point that she could clearly demonstrate the difference between mind and brain, and the ability of mind-over-matter to the extreme of signalling and controlling an individual human cell. She asks, "Is it, perhaps, the organizing qualities of intellect, individuality, psyche, consciousness and awareness, that come to direct the way in which biological life is disposed? Is

there also a possibility that still another "law" of evolution exists, a peculiar force or energy, as yet undiscovered (or even looked for) that is the unifying principle of nature hovering over evolution, directing its destiny?" And then Edmund W. Sinott's book, The Biology of Spirit,³⁶ reports evidence of genetic memory at cellular level--that there is mind in each cell!

Early in 1966, Cleve Backster, past President of the U.S. Polygraph Assn., accidentally discovered that his officephilodendron could read his mind at a distance. The following September, I was present at this Manhattan office suite when he demonstrated this capability to an official delegation of the Parapsychological Assn. In February, 1986, sixteen members and staff of the National Research Council's Committee on Techniques for Enhancement of Human Performance arrived at Backster's San Diego laboratory to watch him demonstrate that the cells of your body, even removed and observed at a distance, know what you are thinking."³⁷

Psychiatrist John Diamond,³⁸ concludes from his years of practice that emotions, attitudes, and beliefs relate directly to mental and physical illness and health--that to be well, one must change his negative attitudes to positive ones, the principle tool for which is meditation. He demonstrates the relationship between attitude and health with muscle-testing and reports on his scientific proofs for the reality of acupuncture. and its meridians.

After fifteen years of research in the field of bioenergetics, Dr. Hiroshi Motoyama of Tokyo reports,³⁹ that he has succeeded in measuring and establishing the reality of both the acupuncture meridians and the chakras. He says that the latter emit energy and may act as bridges between various dimensions of existence. And, one might ask,-- Could not these emissions affect computer operations!

Elder and Alyce Green tell us⁴⁰ that "theta training" (their term for biofeedback), the self-regulation of brain-waves, is a form of accelerated meditation, and the benefits range from better physical functioning to improved emotional balance, to sharpened intellect, to true creativity. But beyond that, they insist that insoluble problems will be solved by the "coming into mind from another dimension" of unpredictable answers--that this technique is "approaching the Source of Creativity."

Robert O. Becker's Cross Currents⁴¹ is an extension of his work as reported in The Body Electric⁴² in the field coming to be known as "energy medicine." His seminal efforts demonstrated the soundness of the claims of Burr and others to the effect that growth and healing of the human body is effected by the guidance and power of the pattern-body, an electro-magnetic-like force-field around and interpenetrating the human body. By using the pattern field of a salamander (who can naturally regenerate amputated limbs) Becker gave a frog that capability. He also shows that a simple portable generator could enhance healing of human

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beings and reduce healing time by two to three hundred percent.

Nobelist-psychologist Roger Sperry has written that ideas of mind-body separation are "simply obsolete."⁴³ And, researcher-biofeedback expert, C. Maxwell Gade at London University, using the "mind-mirror" he created--which is a visual display, electroencephalograph, measuring all four brain-waves simultaneously for both right and left brain--proved that a person can control, alter and focus his brain-waves for specific purposes.⁴⁴

Researcher Patricia Treece, in a wide-ranging survey of thousands of mystics through all major religions for the past two hundred years, concludes that the physical signs of holiness--though uniformly deprecated by all mystics--have two major significance: First, they have a real value to others by pointing to numinous realities; but more importantly, these phenomena demonstrate that holiness is whole-person phenomenon and the body's involvement must not be degraded. She reports eight major categories: expanded sensory perception; characteristics of the "holy corpse" (such as incorruptibility); luminosity; unexplainable energy (including "inedia"--the ability to live for years without food or drink); perfumes of sanctity; levitation; and transportation.⁴⁵

IV. What I have been saying to this point may seem a smorgasbord without cohesion or pattern. In simplest terms, I am saying that universal consciousness, including mind and/or spirit, pervades every part and aspect of the universe, right down to the basic cell and primary unit of everything; that mind/spirit controls everything because it is the God-stuff; and that it is totally interconnected throughout the universe. Thus, God is omnipresent and all knowing, and so are we, and so is a blade of grass.

The description penned by George Russell, the Irish mystic/ poet who used the pseudonym AE, can hardly be bettered. He wrote: "There are corridors in the depths of our Being, leading into the hearts of others, and windows that open into eternity; and we hardly can tell where our own Being ends and another begins, or if there is any end to our Being."⁴⁶

Interconnectedness--true reality and the Great Truth! We are not separate from each other, from those in the afterlife, from the rest of God's creation in the animal, vegetable and mineral kingdoms, nor from God. The belief, the assumption of separateness, has been the Great Fallacy of our civilization. All is One.

And consciousness/mind/spirit does at times influence matter without a physical relationship. In metaphysics and psychical research we have recorded these events and describe them as psychokinesis (mind over matter). Hundreds of such cases, professionally investigated and reported, are to be found in the Proceedings of the American and the British

societies for psychical research. And the cases are still happening. News reports in recent months tell of Eric Montaine of Boulder, Colorado, who can render a person helpless by his stare; two would-be robbers found they were powerless to lift a hand holding a gun, and when given permission to leave, ran like scared rabbits. And then there is a five-year-old Ukrainian girl, Marta Makarova, who attracts metal objects just like a magnet--she has to make an effort to detach the table silverware which always sticks to her hands.

Intentional or unintentional, PK happens in the presence of some people, and some of it can be harmful. Eastman Kodak vice-president John Flory explained to me that photographic rawstock will fog (and thus is ruined) in close proximity to some people, so the Company must very carefully screen all who are authorized to enter the film vaults to ensure the safety of film materials.

Machines of all kinds run well for some folks, not so well for others. Ann Landers' newspaper column reported last year⁴⁷ what Bob Morris of the Parapsychology lab at Edinburgh University confirms in passing⁴⁸--that there are hundreds of people for whom electric watches will not run--from \$3000 models to special quartz jobs; though watchmakers seemingly refuse to believe!

Ruth Berger of Chicago, a psychic-medium, advises me that her presence frequently causes sound-tape recorders, videotape recorders, and microphones to malfunction. It is her opinion that when only certain sections of a recording are blank or garbled, it is because that sequence of her remarks should not be available to a recording.

But our minds might do more for us if we tried--Kenneth Hurst always names his automobiles and talk to them regularly. In his Live Life First Class⁴⁹ he tells of exiting his garage in "Regina" one cold morning to find that he was driving on a sheet of ice, and was beginning to slip helplessly toward a row of parked cars. Quickly he said aloud, "Oh, please Regina, please help us. I've always loved you. I've taken good care of you; I've taken you to the beauty shop (the car wash) every week; please help!" And she did: she stopped with her nose literally just one inch from the nearest car. Incidentally, he told me that the car has a computer control.

Todd Siler, in his current book Breaking the Mind Barrier,⁵⁰ says that since we are products of the universe, the structure of our brains should somehow reflect the structure of the cosmos, and the things we create should reflect the structure of our brains--and accordingly, what we take to be natural laws of the universe are rooted to some extent in the structure of our own nervous system.

A small number of persistent experimenters in the U.S. and Europe⁵¹ have clearly established the reality of the Electric Voice Phenomena (EVP), wherein spirit voices speak

onto standard tape recorders, sometimes through radios, etc., and sometimes in respect to direct questions of the experimenter. Personally, I am satisfied that the experimenter is in fact a medium, and I do not believe that George Meek's "Spiricom" activity has yet been established to the contrary. Raymond Bayless writes me that he is satisfied EVP occurs both with and without a microphone.

But some related phenomena boggle the mind--there are three examples: (1) The late Harold Sherman showed me a tape from his library shelf that contained spirit voices recorded by his friend William Welch in California; a year after receiving and playing the tape he played it for a friend and found a whole sentence, sharp and clear had been added for Harold, and the additional words had been added while it lay on his shelf!--he played it for me. (2) Before tape recording was invented, the dictaphone recorded on hard rubber cylinders by virtue of a recording knife that cut a V channel in the rubber while the cylinder revolved and the knife moved from left to right, vibrating slightly as influenced by one's voice into the microphone. Prolific London novelist Edgar Wallace used a dictaphone; when he died his secretary, Curtis, went to work for another writer who also used such a machine. A few days later Curtis was shocked to hear Wallace's clear voice speak a whole sentence on a recording before his new employer started to speak; Curtis took the cylinder to Psychic News, and the story was published. (3) For the past three years, Walter Uphoff and George Meek have been telling us, through their Newsletters, that researchers in Luxembourg and Germany are now getting recognizable pictures of known deceased persons on their television and computer screens as a result of planned appearances. Uphoff's Newsletter this Spring reproduces the photo of deceased Klaus Schreiber that appeared upon request on a computer-screen of a friend in Germany.

The late Scott Rogo's Phone Calls from the Dead⁵² reports many cases of telephone calls that by-passed Central but rang phones, followed by meaningful conversations. In Spiritual Frontiers, I published one such, received by a friend of mine,⁵³ plus Walter Uphoff's story about his deceased secretary Iris Brace, which was exceptionally impressive since she and he were both on lines to an insurance broker at the same time.⁵⁴

A magnetometer, buried in concrete at Stamford Research Institute was said to be impervious to influence--even from earthquake; but Ingo Swann (who else?) influenced it?⁵⁵ But ordinary non-psychics, like me for instance, made spoons turn to the consistency of soft butter at a Parapsychological Assn. conference at Princeton University six years ago.

One might say that these last several paragraphs relate to trivial, mundane matters that can have little religious significance. But Jesuit theologian Daniel Lidenbach would not agree. His book, The Numinous Universe,⁵⁶ examines the divine harmony in the universe as disclosed by modern physics and psychical research and the surprising parallels to

Jesus' proclamation that the kingdom of God is in our midst--some would even say, is within us. He presents special and general relativity and quantum physics in terms understandable to the general reader, and says, "God is opening paths through fields that reason might choose to avoid [though] enriching for human becoming...because the kingdom of God does not appear within sense experience." Linderbach insists that "the new comprehension of the physical world will lead to a new comprehension of human consciousness"--(there is that word again!)--and concludes that, "meaning appears within the mind not as a result of accurately picturing an experience, but as a consequence of a star-burst of intuitive imagination."

V. Our brains are simply "computers made of meat," is a wise metaphor that was coined recently,⁵⁷ and yet proponents of "strong artificial intelligence" are trying to persuade us that it is only a matter of time until electronic computers will be doing everything the human mind can do, and that pleasure and pain, the appreciation of beauty and humor, and free-will are capacities that will emerge naturally when electronic robots become sufficiently complex in their algorithmic behavior.⁵⁸

Such an assumption is seriously flawed, in my view. It involves no true understanding of consciousness, and fails to recognize the difference between brain and mind. Fortunately for my thesis, a super-scientist has made the technical arguments for me--I refer to Roger Penrose, the Rouse Ball Professor of Mathematics at the University of Oxford, recipient of the Eddington Medal and the Wolf Foundation Prize for Physics, and author of the current volume, The Emperor's New Mind;⁵⁹ also, he was interviewed by Noetic Sciences Review.

Penrose acknowledges that computers now play chess at the grandmaster level, "but," he asks, "do they understand the game as we do?" And he says flatly that there are some facets of human thinking that can never be emulated by a machine--laws even deeper than quantum mechanics are essential for operation of a human mind--"which is more than just a collection of tiny wires and switches...the simulation of anything that could pass for genuine intelligence is yet a long way off." Penrose also admits even if "simulated intelligence" is possible, he is primarily concerned with consciousness, even though he cannot define it, and with the problems of self-awareness, insight, and inspiration, and concludes that "a universe governed by laws that do not allow consciousness is no universe at all." "Hal," the robot in the movie "2001," will always be fiction.

Penrose's thinking has been strongly supported by writers in two recent issues of the Journal of The Society for Psychical Research: (1) By J.R. Smithies,⁶⁰ saying, "Penrose provides compelling arguments demonstrating that the theory that any computer of sufficient complexity must think and feel as we do, is wrong"; (2) F.S. Roberts⁶¹ says, "Super-

computers...can never exhibit all the phenomena of consciousness."

And yet, when all is said and done, there are anomalous phenomena involving--but not generated by--electronic circuitry that deserve careful consideration, not only because they go beyond presently possible electronic explanations, but especially because they are important phenomena which seem to demonstrate the parapsychological interaction between human consciousness and the physical world--especially in computerized operations.

The anecdotes to follow are the heart of this paper, but their presentation would not have made sense to me without the rationale furnished above. In addition to the Neil Michelsen and Marcel Vogel anecdotes cited at the beginning of this paper, and the half-dozen briefly mentioned in between, the following have been reported to me firsthand.

A religion writer in Michigan reports: "It has been like a gremlin is wandering around inside my computer, affecting my programs and files and trying to prevent the completion of my research." He had just purchased a new computer on which he intended to use the "Godspeed Bible Program," but, he tells me, I have lost complete sections of files, and the printing performance even from some saved discs seemed to revert to a lesser dot-matrix, an older style format for printing which I could not use, especially with the graphics." This gentleman seemed to blame a malevolent or demonic influence, and called it an "alien interference." He wrote to the manufacturer that the Demonstration Disc "dominated the whole Godspeed program, and I could not open up the 66 books of the Bible, just the four Gospels. I would like to know how and why the Demo Program does what it does." He clearly did not blame himself!

A history writer in North Dakota sues a Panasonic Electronic Typewriter R430 with "Accu-Spell" attachment. However, he has found that the typewriter will select and correctly spell words that are not in the typewriter's dictionary. On Oct. 12, 1990. he was writing about Hitler's invasion of Poland and the typewriter properly wrote and spelled Anschluss (which refers to the economic and political union of two countries after annexation). Previously, on July 17, 1990, while writing about the early near-east, the word Assyrian properly came out. In both cases the word in question was not in the typewriter's vocabulary at the time. He tells me, "If this typewriter can put the subject together and write the subject word, it is one dandy typewriter."

Barbara Bzura of Sunrise, Florida, is a supervisor at Systems One Corporation, Miami International Airport, which handles airline reservations by computer. But Barbara herself jinxes the computers if she gets too close. The PersonalComputer on her desk has to be serviced every week and the serviceman says there is no doubt that she affects her

computer. Network operations especially are forbidden to her, and various computers have prominent "No Barbara" signs affixed to them. Can it be significant that Barbara was a fully qualified Catholic teaching-nun who voluntarily left the order because of personal conviction as to career unsuitability!

Ron Mangravite explains that his computer has worked for five years without any down-time, which is exceptionally good, and he attributes this in significant part to "maintaining a sort of friendly attitude toward it." By contrast, he says that in his early days of public speaking he would frequently burn-out audience tape-recorders, until he came to regard them as non-threatening. One occasion in a private counseling session with a man seemingly too passive in his life situation, Ron attempted to generate a bit of passion with voice and hand motion for emphasis; the television set across the room turned itself on and had to be manually turned off; this happened three times, and in addition a wall-light above the set also fell.

Ron was consulted by an electronic-tube manufacturer whose inspection line was operated by women; on days when one or more of the women felt bad, more tubes had to be rejected as defective. By careful checking it was determined that the failures were legitimate, but also that they were not missing defective tubes on their good days--more defective tubes were produced on the inspector's off days, even though these women had nothing directly to do with production.

Tamar Lindsay of New Jersey, a high scoring Mensan, found that she could turn-off a VCR from across the room. She works for a commercial word-processing business and has observed that there are some individuals "for whom 'stuff' just wouldn't work, and that when they are around, the same 'stuff' wouldn't work for others either." She also reports that her brother in Kansas supervises a computer-controlled production line where plastic molds are manufactured; the line is so sensitive that it has to be adjusted to suit the "personality" of each operator even though they do not manually interact with it. Moreover, her brother always warns new operators not to be surprised if the line's operation is sometimes disrupted, which will happen if he himself gets upset, even though his desk is several feet away.

Melanie Oates is an executive who says she apparently entered a client's office too soon after attending "a particularly stimulating and disturbing intensive workshop on spiritual growth"--because when she did she "totally fouled up the air-conditioning control system of that office." Later, upon reaching her home city, she crossed the airport parking lot and noted that radios in parked cars turned on as she passed. Getting into her own car, she heard a sound in her briefcase and discovered that her tape recorder had turned itself on and was erasing--which manually required depressing two buttons simultaneously.

Larry Linke, a South Carolina executive, and SFFI member, once blew-out an expensive film-processor just by being close to it. On several occasions traffic lights turning to red as he approached, have quickly reverted to green to let him through. Also, railroad crossing bars have changed their action patterns upon his approach.

Paul Campbell, who works in creative design, says that light bulbs blow-out when he is upset; but, that when he is in a good, creative mood, traffic lights often turn green in sequence to facilitate his travel.

Gaylon Vaden of Honey Grove, Texas, now 29, developed a rare blood disease and was near death when his life was saved by experimental drugs. However, that trauma somehow changed him, and for three years every type of electronic equipment would malfunction when he was nearby; his family observed these repeated recurrences. After three years his blood problem went into remission, but his effect on electronic circuitry now recurs only when he is under stress. A U.S. Government health hearing verified and recorded these anomalies. Vaden describes the malfunction of vending machines that deliver merchandise, then return his money, and then return more money. Long-distance radio transmission by microwave is intercepted when he is near its serial path, and he will hear the transmission for a few moments. As his blood pressure reduced from a critical 230/170 to nearer normal range, he found these anomalies happening less frequently, but for the past two years he has learned by experimenting that he needs only to "think" malfunction near computer-controlled equipment, and it will happen in some form.

VI. This paper is focused primarily on spontaneous phenomena, but the value of these phenomena is enhanced when we can see comparable results in intentional phenomena produced through controlled experiments in the parapsychology laboratories with volunteer ("non-psychic") subjects, operating both in proximity and at great distance from the machines, and evaluated statistically. One of the earliest to do developmental work in this area was Dr. Helmet Schmidt, initially at FRNM and now with Mind-Science Foundation, San Antonio, with computer-monitored Random Number Generators (RNG) and Random Event Generators (REG). This work has been replicated and extended in recent years in the Engineering Department, Princeton University, by Dr. Robert G. Jahn, Brenda Dunne, and Roger D. Nelson. The targets are generated automatically at random rates but, in the aggregate, over thousands of "runs" will average-out equally by chance, unless influenced psychokinetically by the operator. Thirty years of this work involving 800 experiments utilizing 68 operators have resulted in positive scores that are statistically ranging from 3000 to 1 against chance, to 100,000 to 1 against chance.

In trying to explain the inexplicable, we should be aware that the "consciousness" of the machine may be reacting or interacting with that of the operator, but note that

this would not be the "intelligence" of the machine. Emotions of the operator do seem to be as large a factor as do intentions.⁶² Dean Radin, though admitting that "a completely objective control condition is in fact not possible," ran two laboratory experiments to test the probability of psi-mediated failures, and "found reason to believe that some computer failures may be psi-mediated." He also notes that there now are "thousands of anecdotes about unusual human-machine interactions."⁶³

Robert L. Morris, who holds the Koestler Chair of Parapsychology at the University of Edinburgh, writes⁶⁴ about the difference between laboratory work, where users are self-selected and well trained, and computer-controlled operations in the workplace environment with users that range in sophistication from the skilled programmer to the naive end-user. System complexity and increased sensitivity make it more difficult to determine sources of failure when there are erratic or short-lived malfunctions ranging from total system "crashes" to minor "glitches," the "gremlin effect" and failure of a modem to carry a signal. But clearly, he finds some malfunctions "cluster around certain users and indicate a real functional relationship between the user condition and machine functioning."

His studies do find that both personality characteristics and introversion, etc. and the psi-missing type of person, as well as those with a negative attitude toward the equipment (described as the "Pauli effect"), cause computer problems and are coming to be known as "malfunction linked people" or MLPs; oppositely, there are the function-linked people" or FLPs, for whom everything seems to function well. Maintenance and installation staffs also can predict difficulties to come where the workplace social structure produces tension or where key personnel really do not want the equipment. Morris looks upon most "artificial intelligence" proposals as "rather speculative," but notes that fifth generation computers employing "logic programming languages" are very effective in restricted fields "within the constraints of the logic of their programs" provided they "do not seek creative combinations that go against its conventional wisdom;" also he predicts a future computer "system in which human and computer are truly partners, with a re-emergence of emphasis on the human component and the human factors that affect our values and the rich qualities of human experience."

In a recent letter, Bob Morris tells me that installation and service engineers confirm his theory of "malfunction linked people," saying that: "Some customers are their own worst enemies." In one such case reported to Morris:

A customer reported problems in loading the typesetting program, but when the engineer tried, it was OK. Altogether, both the customer and the engineer tried to load the program five times each. It worked every time for the engineer and never for the customer...it seems to be an example

of one of your labile systems, where perhaps the customer's anxiety was enough to carry the fault over the edge.

In the course of this paper I have described twenty specific cases, all but two of which were reported directly to me by the persons involved, in which human consciousness--in some cases before, and in other cases after, physical death--seemingly interacted with computer operations in technically inexplicable ways. I submit that in each of these cases specific, individual, human consciousness intervention with the computer is the most logical and probable explanation. I should emphasize that in each case there seems to have been a strong emotional factor present; also, that the cases demonstrate both positive results by exemplary operations, as well as negativity by inexplicable glitches and malfunctions.

In summary, whenever a computer utilizes data it has not been given or otherwise accessed from the programmed source, or when the computer performs a manipulation it was not programmed or designed to perform--or when glitches occur without an electronic reason, then, but for readily discoverable technical fault, the reason most likely is the psychic/spiritual intervention of (human) "consciousness." Oppositely, the same cannot, at this stage of knowledge, be claimed for exemplary operations beyond reasonable expectation that do obtain.

Humans have the power to think, to love, to will, to laugh, to imagine, to create, to plan, to speak, to choose. No computer will ever have those powers.

¹See The Ice People by Renne Barjavel (Morrow, 1971), a science fiction novel which won the top literary award in France and easily matches the avant garde work of the writer's French predecessor, Jules Verne--describing a simple gadget strapped to the forehead of a person from an ancient civilization, who was retrieved from a time-capsule deep under Antarctica ice, and revived, and which, when connected to an in-house television circuit, reproduced sound and picture from that survivor's memory, showing the last days of that ancient civilization. And, in 1977, the world news reported that thirteen nations met in London to discuss exploration, etc. of Antarctica.

²No. 1/3, Winter, 1990.

³June, 21-25, 1991.

⁴Editorial in Noetic Sciences Bulletin, Winter, 1990.

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Frank C. Tribbe is a member of the Board of Trustees of ARPR and Chairman of of Publication Committee.

RESPONSE TO FRANK C. TRIBBE

George W. Fiske

In this paper Frank Tribbe has given us a fascinating tour along the frontiers of mind-science relationships. His extraordinary broad contacts with leading figures such as Neil Michelsen, Elmer Green, and Marcel Vogel have placed him in a position to shed light from many varied stand-points.

The heart of Frank's article is summed up on pages 21 and 22 as he writes, "I am saying that universal consciousness, including mind and/or spirit, pervades every part of aspect of the universe, right down to the basic cell and primary unit of everything; that mind/spirit controls everything because it is the God-stuff; and that it is totally interconnected throughout the universe. Thus, God is omnipresent and all-knowing, and so are we, and so is a blade of grass."

Following a beautiful quotation from George Russel, Frank continue: "We are not separate form each other, from those in the afterlife, from the rest of God's creation in the animal, vegetable, and mineral kingdoms, nor from God. The belief, the assumption of separateness, has been the Great Fallacy of our civilization. All is One."

Stemming form this view of the unity of all there is, Frank concludes that modern sensitive electronic equipment will have interaction with the weak, but volatile electromagnetic fields thrown out by the human body-mind. At this point in writing my response I needed to visit the hospital to see some friends. The clerk at the desk was long delayed in giving me two room numbers. Finally she looked up at me and said, "I can't get your information. Every time I press the key for G, I get H." She then gave me the names I wanted to another woman at another computer. This worked immediately and I got my information. Unfortunately, this was not the time or place for more careful checking.

Those who spend time working at computers know that battle with static electricity which will sometimes make them do odd things. Computer stores sell special sprays to nullify static electricity. In Bernard Grad's home a few years ago he conducted experiments on my wife, Jean, and me getting positive electrometer renderings as we did laying on of hands healing. Out in the business and communications world of today we are continually mixing human fields with sensitive electronic equipment and as we do, sometimes strange things can happen.

At the time I began in the field of word processing and computers, I vividly remember the words of my first teacher who said, "These things sometimes have a mind of their own." I doubt that the lady who expressed this thought was aware of the depth of meaning of her words. Examination of her

thought leads us to a central question of this conference. Most of us in attendance would agree that human intelligence is creating more and more intricate computers and software every day. These machines have become a remarkable extension of the human mind, sometimes solving problems in seconds which formerly might have taken years. It has not all been a plus, some monstrous disasters have also occurred from badly written software, or failure of sensitive parts. But do these things, these ever-more complex machines, ever have a "mind of their own?"

Frank Tribbe comes down solidly at the end of his paper saying, "No." In his own words, "Humans have the power to think, to love, to will, to laugh, to imagine, to create, to plan, to speak, to choose. No computer will ever have those powers!" Perhaps he is right, but let's not close the door with a "never."

Tribbe opened the possibility of electronic equipment being used by the dead, the spirit beings "on the other side," to communicate with us. From Harold Sherman, Raymond Bayless, Walter Uphoff, and others he tells us of amazing communications which the general public would reject as impossible. Can the deceased make themselves known, not only audibly, but also by having their faces appear on television screens? Much more needs to be demonstrated in this area, before general acknowledgement of the possibility, except for readers of the National Inquirer.

But still the formidable question remains, do those sophisticated invention "have a mind of their own?" Let us recall the beautiful work of the priest-paleontologist Teilhard de Chardin on the rise of consciousness on earth, from the stone, to plants, to animals, and finally to human through enormously long centuries of time. May I suggest a further chapter in the story?"

From whatever scenario you wish to choose, let us suppose that the human race is removed from the face of the earth. Disease, over-population, famine, war, earth being struck of a major meteor; it could happen quickly, perhaps soon. When the last humans are gone from earth, what then? Rather than redo the Teilhard scenario over again, consciousness rising from the rocks over billions of years, how about artificial intelligence, already advanced, sophisticated, being the stepping-stone for future life on planet earth. May I commend to you the March issue of Discover magazine with an article on Rodney Brooks and his amazing robots, that think their way out of problems. Combine this with the rapidly moving work in genetics and perhaps new, self-perpetuating beings might in a relatively short period of time come forward to build better civilizations than earth has ever known.

Might we further open our minds to what, at first, seem only a daring possibility? "Can the souls of the departed who have long loved and learned on earth, pass into these

neo-beings and give them the qualities which tribbe suggests belong only to humans?

You may think I am now talking wild ramblings of science fiction; in fact, it's a very old story. We have documents that can be traced back to the earliest Christian era, with roots in pre-historical time, which describe similar events. Translated from Arabic, in the Forgotten Books of Eden we read: Then Adam wept and said, "O God, when we dwelt in the garden, and our hearts were lifted up, we saw the angels that sang praises in heaven, but now we do not as we used to do..." Then God the Lord said unto Adam, "When thou was under subjection to Me, thou hadst a bright nature within thee, and for that reason could see things afar off..." Did the first man, Adam, begin his life on earth with memories of a brighter, better life before?

Richard Heinberg in Memories and Visions in Paradise explores the universal myth of a lost golden age. Is there some substance behind this myth which comes not only from Judaism, Christianity, and Islam, but also from Mayan, Hopi, Greek, Chinese, Hindu, and Iranian culture? Can spiritual beings have come into our earth life, stepping into less than human bodies, creating enormous cultural jumps? Might this explain these all pervasive stories from ancient times of a higher state of being, but lost long ago?

Teilhard's last words suggest that if humanity utterly destroys the planet earth, we could, as spirit being, go venturing off to other planets, or other planes of existence. That is, the earth may go, but in spirit we will go on. May be suggest a corollary thought? Perhaps, in times long past, when their planet homes were lost, their spirit beings trooped to earth, melded with its more primitive forms and created what we have known as civilization. Should the human race become extinct, but our planet still exist, possibly under conditions of such heart and drought that it could not sustain life as we have known it, could spirit beings pick up with the remnants of our technological forbidding weather conditions? Then the intelligence of that new -day life on earth would be "artificial" no more.

Frank Tribbe is right that current computers and robots lack qualities of human consciousness, but let us not close the door on what the future may bring.

The Rev. George W. Fisk is a member of the Board of trustees of ARPR and Chairman of the Research Committee. His address is 2531 Dover Lane, St. Joseph, MI 49085.

ARTIFICIAL INTELLIGENCE: A MATTER FOR DELIBERATION

Claire G. Walker

As AI is developed, it is crucial to consider its purpose and limitations, define its goals, and monitor what happens. Religious, psychological, and philosophical sources are referred to in commenting on the shortfall in our spiritual evolution. Answers to these questions are discussed: Can mind in man build mind in a machine? What can we learn from computer scientists that will further our understanding of consciousness? What do we mean by "spiritual evolution?" Concepts that AI, religion, and psychical research have in common are explored.

Can AI be Achieved? At a meeting of twelve eminent scientists in 1984, the Dalai Lama was told about the ambition in the West to produce "a device fabricated entirely out of electronic parts, that would exhibit intelligent behavior. It could talk as if it were a person." In fact, the Dalai Lama was told, he would be able to converse with it as if it were a high lama.

The scientists went on to pose a question: "Would you, Your Holiness, say that this artificial intelligence was a reincarnate being?" The Dalai Lama paused, then laughed, and said, "When you have it, put it in front of me, and we will go back to the discussion."¹

The Dalai Lama's response reflected a question being asked in the 1980's in many forms. But in 1991 this follow-up interview is on the horizon. When the idea of AI was born in the 1950's, some other revolutionary ideas were also coming to the fore. Norbert Wiener, author of cybernetics theory, called the development of communication theory the second industrial revolution.² At the same time Ludwig von Bertalanffy was already working out the General System Theory to encompass open systems in all fields, thus bringing together their similarities and offering an antidote to overspecialization.³ Computer technology kept pace. In rapid succession after 1947 it went from valves and vacuum tubes to transistors to integrated circuits and finally in the 1970's to electronic microprocessors using silicon chips.⁴

The public imagination has been thoroughly engaged by the idea of AI for the last 40 years. During the 1980's the idea of imitating the complex circuitry of the brain through parallel, instead of serial, programming greatly advanced expectations for a thinking machine. Connectionism with its parallel distributive processing is based on what understanding has been achieved of the brain's architecture and functioning. No one denies the enormity of the work yet to be done. What flavors the literature of the 1980's is the enormous optimism that all will be done, and that AI may be only decades away.⁵ Computers were ecstatically extolled as enthusiasts projected their visions. We would soon be living in an effortless, computerized world of which tantalizing descriptions appeared in the 1980's.⁶

The universe is a huge computer, said Edward Fredkin, and artificial intelligence is the next step in evolution.⁷ (Curious, the way a current preoccupation can be seen as the next step in evolutionary progress, whether it is kundalini, global thinking brotherhood, peace, or now, AI!) True and already demonstrated, computers can relieve us of the tedium of complicated calculation while at the same time arriving at solutions of problems so intricate as to defy human solution. Quantities of information so large or complex as to be unmanageable can be handled, stored and accessed with the help of computers. Robots can explore places dangerous for, or inaccessible to, human beings, such as Mars and the moon.⁸

Brushed aside as temporary obstacles were any shortcomings of machines for giving an intelligent simulation of human behavior. For the time being computers might be restricted, inflexible, lacking signs of consciousness, unable to replay or adjust themselves. Nevertheless, specialists saw the possibility of eventually completing the science fiction dream that began with Frankenstein in the nineteenth century.⁹ Computers, it was predicted, would be solving problems and producing answers which people never could. When a computer could bring human life to a standard of material security and ease never before known, it would go on to the point of having consciousness and eventually become like a human. As humans were replaced by the tireless, less costly and more efficient computers, people would be left to function contentedly on their own level. More extremely, as Hans Moravec speculates without dismay, humans might even become surgically embedded in computers and thus achieve immortality, even though no longer the dominant earth species.¹⁰

Japan stole a march on us in 1981 with its ten-year Fifth Generation Computer Project. Supported by eight major Japanese firms, this project was planned to make Japan the world leader in furthest development of Very Large-Scale Integration chips to produce the talking, listening, and thinking machines of the future.¹¹ M.I.T. responded with Technopolis, another plan looking toward very high technology for the 1990's, also located in Japan.¹² Minsky of Harvard predicted that AI would change our view of mind as radically as evolution theory changed our view of life.¹³

Some doubts about computer competence almost evaporated in the fever and technical progress of "hacking."¹⁴ After all, computers have begun to create changes and adjustments in their own programs, and to learn and translate languages.¹⁵ At all levels of education computers are proving themselves. Some day, it is said, they will increase productivity so much as to eliminate poverty over the whole world.¹⁶ They will learn to take care and organize themselves, despite their lack of common sense, morals, and consciousness.¹⁷ As for the actual circuitry of the brain, they may not imitate that with total accuracy, but they will

be faster in whatever they do as they learn to save time by finding optimum solutions rather than by working the whole "tree" of possibilities.¹⁸ Eventually computers will be able to move around more skillfully than they can now, and manipulate objects more handily.¹⁹

Some Important Questions. The controversy over whether AI can be realized probably will not die. Penrose's contention that computers can never achieve the subtlety of the human mind, similar to arguments by John Searle that a computer can never really understand as humans conceive of understanding, may well be largely nullified, if not swept away.²⁰

However, assuming ultimate realization of AI in its full potential, there are some disturbing questions more fundamental than doubts about mere mechanism. I will address the rest of this paper to these:

1. Are we not in danger of losing sight of more fundamental human goals while we are developing intelligent machines?

2. Do we not, in concentrating on our machines, dehumanize ourselves?

3. Might we not be biting off more than we can handle at this stage?

"The Soul's Invincible Surmise." We are living in a time of crisis so serious and widespread that the doomsayers have been among us in full force. Like the fear of cancer and AIDS, predictions of final catastrophe are hard to escape. Every instance of shocking or man-made disaster, immediately and vividly publicized around the world, seems like a confirmation of our worst expectations.

Violent upheaval, however, is not new to our species. For the centuries and millennia that man has muddled through devastation, his qualities of faith and trust, plus a dogged devotion to his kind, have supplied a large part of his remarkable staying power. The outward structure of these assurances has been in religion, and I submit that religion in turn is built on a psychic surmise that has never been absent from human experience. Though we share psychic sense with other kingdoms of nature, we formulate it most fully in our own as the perennial wisdom.

The paramount idea of the perennial wisdom is that man is essentially a spiritual being in a spiritual world. The material environment, real enough to us in day-to-day living, is a temporary and incomplete manifestation at this stage of human evolution.

I am struck by the recent Institute of Noetic Sciences publication Creative Work by Willis Harmon and John Hormann. The whole book is another effort to reach the thinking public, concentrating this time on the business sector, with

the idea that we are on the verge of a revolution in world view as radical as was the transition from medieval to modern society. The authors identify a trend toward spiritualization in the West, ascribing to it the ecology, non-violence, and civil rights movements among others which Harman identifies with a coming new worldview or "metaphysic."²¹

One aspect of this new world view is the revision of the classical science paradigm which has slowly been absorbing the implications of quantum mechanics and subsequent discoveries of the 20th century.²² The new science paradigm now unfolding is part of this. So is the present swell of interest in channeling and related practices, experiences with kundalini and other forms of self-realization, the serious investigation of the paranormal, and the reinterpretation of religious symbolism in the light of biblical research and mythology. But is all the work now extended into AI part of spiritualization?

The authors of Creative Work say:

Regardless of whether the new metaphysic can be clearly identified at this point, some fundamental transformation of modern society is almost certainly imminent. The demonstrated inadequacy of the present scientific worldview has produced an imperative. It is impossible to create a well-working society on the base of a view of reality which is fundamentally inadequate, seriously incomplete, and mistaken in basic assumptions. Yet that is precisely what the modern world has been attempting to do.

Putting it more bluntly, if the "perennial wisdom" were to be seen as a complement to western science and a summary of important and universal humane experience, the whole of modern society will be restructured as a result. If the fundamental fact about us is that we are spiritual beings in a spiritual universe and the modern denial of this is in error, then any social structure which is built around that denial will in the end fail to be satisfactory.²³

I will not argue that the work on AI has no possible spiritual potential, but its character at this time seems more a part of the modern denial than of a spiritualizing trend. In fact, the dedication of some computer scientists looks like a religion in itself,-- but pseudo-religion of the old reductionist type.²⁴ On what foundation does AI research rest if not on three classical assumptions of the materialist science: that all processes can be broken down to their elementary components; that they and the observer can be regarded as the two parts of a dualistic universe in which the latter is apart from what he is observing; and that observation is validated only by quantitative measurement.²⁵

We have a long way to go to understand ourselves before we get into the business of reproducing our own intelligence in machines. To start with, perception is the link between us as conscious beings and the world around us or beyond us. Hofstadter argues that computer scientists working on AI have tried to enter at too sophisticated a level of perception, before understanding its elements. We need to find out exactly what is involved in such basic processes as identification of simply letters of the alphabet, and why serifs make a difference. How do we recognize our own mothers, is a question to which he gives a lot of attention.²⁶ Says Hofstadter: "Asking for a program that can discover new scientific laws without having a program that can, say, do anagrams, is like wanting to go to the moon without having the ability to find your way around town."²⁷

Since reflection will bear out that walking across the street to get a newspaper may be much more difficult for a robot-computer than moving around on the moon, we come to a primary question: What is intelligence? We have no clear answer, nor are we sure just how complex a concept we need for representing it in computer symbols. Intelligent behavior seems to involve creativity, mobility, self-protection, versatility, fault tolerance, ability to see, hear, and understand as well as to function outside rules when necessary. Coping both with the unforeseen and with great complexity is indispensable. Though computers already are clever, intelligence is a bit more than cleverness.²⁸

The Turing Test of a computer's ability along one line--i.e., deceiving a human into thinking he is dialoguing with another human--is scheduled for a trial demonstration in November, 1991. But even the computer that passes will not be able to perform at less than its best, or in a wool-gathering mode of daydreaming, or be inspired to lofty levels of feeling--or understand jokes. It may have intelligence in the sense of cleverness and facility. But the psychic nuances that underpin value-conscious man will not be there. A new religion of information will recognize the computer as its god.

The grim fact of our time in the enormity of terrifying problems that we face is that we are out of touch with our spiritual resources, and uncomfortable with our psychic dimensions. Having accumulated mountains of information, and having embraced that more seductive of additions--viz., comfortable living--we have lost sight of the pace at which the horrors of violence among nations, brutality on the streets, the perversion of poverty, the greed of affluence, and the waste of chronic indebtedness have crept into our lifestyle.

The challenge to plunge into the new technology is real. Like the victorious war of which the dislocations following in its train were unforeseen, the all-out devotion of technological advance promises to make us feel good about ourselves for the moment. Furthermore, the effort to achieve AI is easier and more rewarding than trying to find cures

for our society's appalling ills. But under the smooth hum of our machine, there is still the whisper of our souls' surmise. Let us listen to it.

Ways of Dehumanizing Ourselves. The idealistic concept of a wholeness of being is in the air of the 1990's, along with a persistent inquiry into what being fully human could mean. Perhaps my second question is just another facet of the first. For it seems to me that this perception of oneness that has been tentatively dawning during this century is in accord with the respiritualization, and is close to the opposite of the technical sophistication which we are more actively seeking.

We may be well on our way to dehumanizing ourselves in the low priority we give to the needs of global humanity. Even in the limited context of our own nation, human needs do not seem to be a primary concern unless they pertain to the well-to-do. Contrast two statements. One is the idealistic, even moving, one of Levy about the activities of the AI "hackers" of the 1950's and 1960's.

As I talked to these digital explorers, ranging from those who tamed multimillion dollar machines in the 1950's to contemporary young wizards who mastered computers in their suburban bedrooms, I found a common element, a common philosophy, which seemed tied to the elegantly flowing logic of the computer itself. It was a philosophy of sharing, openness, decentralization, and getting your hands on machines at any cost--to improve the machines, and to improve the world. This Hacker Ethic is their gift to us: something with value even to those of us with no interest at all in computers.²⁹

But after the 1960's, science--perhaps because it required large funding--settled into the quest for profit. In 1988 Pagels wrote of the adage that knowledge is power; that philosophizing on it brought him misgivings about AI, with one expression of which he ended his thought-provoking book.

[It] leaves open the question of whether we possess the wisdom to exercise that power, and whether we who possess it are ready to extend it to the billions who are powerless. Sometimes I wonder if it will be the poverty of the poor or the greed of the rich that will be our undoing...I continue to believe that the distant day will come when the order of human affairs is not entirely established by domination. And even if that day should ever come, it seems worthy of our hope.³⁰

It is understandable but no less dehumanizing, if we permit crucial human services to be ignored or obscured while we put our best resources into computerization. But there are other more direct ways to dehumanization. One of

these is to be content, ourselves, with functioning on a physical level with material values.

In 1980 Erich Jantsch, a Systems scientist, wrote a brilliant follow-up of concepts earlier advanced by Ludwig von Bertalanffy and others. Jantsch's Self-Organizing Universe has become a text. As part of what he termed the dynamics of a multilevel reality, Jantsch cited the seven energy levels corresponding with the seven kundalini chakras and characterized each. The lowest three he named the crotch, focused on physical survival; the pelvis, on sexuality; and the solar plexus, on power over the environment and other people. The other four were characterized respectively by transpersonal love and connectedness with all mankind (heart), and seeking of god (at the throat), wisdom (the third eye, on the forehead), and unity with the divine principle (crown, above the head).³¹ He commented that "Most people live according to one of the three lowest chakras." This would be hard to refute. It is legitimate to question whether the idea of AI has much concern with raising either our energy level or the fullness of our brain's functioning, to say nothing of our full realization as human beings.

A second direct way to dehumanizing ourselves is in a subtly occurring change in our perception, the aspect that interests Hofstadter. Turkle's concept of the second self involved what she saw as a trend toward thinking of our selves as machines. This Turkle did not note in a critical sense, condemning AI, but as affecting in an interesting manner our philosophy of human nature. We are both fearful of and fascinated by ourselves as machines, and this will have its own implications, not necessarily bad.³²

I question this. A new book on the wholeness concept by Anna Lemkow expresses my view:

The current attempt to see the self in terms of a computer is to be self-alienated and alienated from nature, and from the living cosmos itself. Such a view is hostile to the cultivation of meaning and value, and so to the development of a sense of the whole.³³

The other side of this picture is seeing machines as people. Scientists get into a pattern of personifying their machines.³⁴ In fact, we all at times bestow pronominal status on our instruments, cars, boats, and even our plants or trees. But when we encounter anthropomorphized computers like HAL, ELIZA, DOCTOR, or RACTER, we do well to stop and ponder.³⁵ This kind of perception could do as much damage to our spiritual evolution as the personification in our past history of our own symbols, myths, and gods. Computer sciences could become examples of what Bertalanffy called scientism, in so far as they bring "the intrusion of scientific ways of thinking into fields of human experience where they do not belong: that positivistic, technological, behavioristic, and commercialistic philosophy which devaluates man into a robot and handles him accordingly."³⁶

The potential scenario becomes still more extreme. Suppose thousands of computers are eventually fitted with the rules of productions of expert systems with their magical "lore," beyond mere information and knowledge to a sort of know-how. Supposed these networks develop the ability to talk to one another, at first on straight-forward, pragmatic matters. Michie and Johnston foresee a time about 2500 or 3000 when man "could end up as a race of uncomprehending parasites," while electronic networks took over the management of civilized life.³⁷

Excessive Reliance on Machines. In a real sense this subtitle is the converse of my third question: Might we not be biting off more than we can handle at this stage? Much of what is to be said here is too self-evident to need laboring. It is sometimes observed that humans have been evolving over uncountable millennia, whereas silicon devices have come to sophistication in 40 years.

Turkle uses the phrase, "the unspoken anxiety" of our age, that machine may be working along toward their own ends, and not be concerned about ours after we take the trouble to endow them with intelligence.³⁸ Instead, it might be appropriate to hope that the prediction of Pagels may in its time come true, that machines may eventually become intelligent, but in a different way and with different limitations from what we know as humans.³⁹ Still, we can always remind ourselves that machines are no more like humans than shells are like legs, even though both transport, and this is as it should be.

Nevertheless, we are putting more and more reliance on our machines.

Michie and Johnston in their Knowledge Machine, O. B. Hardison in Disappearing Through the Skylight, and Hans Moravec in Mind Children, as well as Stuart Molroyd in Alien Intelligence, all have in mind end results we can hope are fantasies, coming about as a result of excessive human dependence on machines.

Michie and Johnston more soberly expound on the risk of actually losing control of the computer. Information, they stress, has to be structured in order to serve as knowledge. Knowledge has to be intelligible in order to be either usable or manageable. In practical human terms that means humans must be able to understand what is going on in the computer. When the programs and rules become so intricate that they are unintelligible to their human monitors, machines will be out of control, and we will have spectacular breakdowns. They cite the catastrophe of Three-Mile Island as an example of human breakdown caused by computer intricacy.⁴⁰ There have been similar others, less serious. But a non-catastrophic example they cite of computer unintelligibility is more mysterious and perhaps potentially more alarming.

That example is the solution of the Four-Color May theorem. The question was, will four colors always be enough to make a map so that no bordering areas will have to be of the same color? Mathematicians believed this was so, but tried in vain to prove it. They could prove that five colors would suffice. Finally, a computer programmed by a team at the University of Illinois produced the proof. It took 1200 hours of computing. But the problem remained that even after that, no humans have been able to verify what the computer did. So in that instance the computer become an authority figure.⁴¹

It is arresting to contemplate that less than a century of accelerated change has nullified some established assumptions. Over the source of history man has grown in his understanding and ability to control his environment. But our expanding technology is making our environment more complex to the point where our ability to comprehend it is declining while complexity is growing. If, Michie and Johnston point out, the ratio keeps increasing on the side of complexity, "...then sooner or later complexity begins to be spawned faster than our ability to understand and subdue it. The change-over point was reached by industrial man at some point during the past decade."⁴² A result is that more people have to try to keep track of what fewer people produce. We can see that happening in our banks, our government, and our stores.

I have already referred to Moravec's vision of the future.⁴³ Holroyd warns that "...ground once ceded to AI will not be so easily regained."⁴⁴ Weizenbaum, himself a computer enthusiast, cautioned against the self-delusion of attributing consciousness and human feelings to computers, for there are ideas that no machines will ever understand because their objectives are inappropriate to machines.⁴⁵

However, it is Hardison who supplies the coup de grace when he sees an ultimate indifference to us on the part of our perfect, intelligent computers. Not only does he concur with William McLaughlin of the California Tech Jet Propulsion Laboratory, saying in 1983 that "...the close of the 21st century should bring the end of human dominance on earth." Hardison adds in his 1989 book that our silicon devices will not be state-dependent as we are on earth, but will find space a better habitat, and will lose interest in communicating with their creators.⁴⁶

Right now many people believe we are already in a situation of excessive reliance on computers. But this may be a temporary phase like many other transitions we have been through. Nevertheless, it does not inspire confidence to have a young store clerk consult a calculator to learn the total for five fifteen cent purchases, or to figure the tax on a bill for exactly one dollar. Somehow it is unsettling to consider that the individual of the future who wants to do long division by hand may have to enroll in an advanced post-graduate course.

In conclusion, I have little doubt that AI will mature, and I welcome it. But I wish we would remember who we believe we are. I hope we will look ahead before we make silicon contrivances the teachers, agents, gods, libraries, playthings, and authorities of carbon man.

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⁴Tom Forester, High-Tech Society. Cambridge, MA: MIT Press, 1987. p. 41-45; Joel Shurkin, Engines of the Mind. New York, NY: W. W. Norton, 1984. p. 300-320.

⁵Pagels, Op. Cit., p. 117-126; O. B. Hardison, Disappearing Through the Skylight. New York, NY: Viking, 1989. p. 307-308; Donald Mitchie and Rory Johnston, The Knowledge Machine. New York, NY: Wm. Morrow, 1985; Steven Levy, Hackers: Heroes of the Computer Revolution. Garden City, NY: 1984. pp. ix, 27, Chapter 2.

⁶Sandy and Martin Hintz, Computers in our World Today and Tomorrow. New York, NY: Franklin Watts, p. 6-8; Robert Wright, Three Scientists and Their God. New York, NY: Random House, 1988.

⁷Bertalanffy, General System Theory. p. 20.

⁸Stuard Holroyd, Alien Intelligence. New York, NY: Everest House, 1979. p. 42.

⁹Ibid., p. chapter 2.

¹⁰Sherry Turkle, The Second Self. New York, NY: Simon and Schuster, 1984. p. 261.

¹¹Forester, Op. Cit. p. 41-2

¹²Ibid., p. 15

¹³Ibid., p. 49

¹⁴Levy, Op. Cit.,

¹⁵Hardison, Op. Cit., p. 307-8

¹⁶James S. Albus, Brains, Behavior, and Robotics. Peterborough, NH: McGraw Hill, 1981.

¹⁷Holroyd, Op. Cit., p. 66

¹⁸Ibid., p. 50ff.

¹⁹Ibid., p. 44

- ²⁰Roger Penrose, The Emperor's New Mind. New York, NY: Penguin, 1991
- ²¹Harman and Hormann, Op. Cit. p. 91=92
- ²²Dr. Barton Houseman, of the Chemistry Department of Goucher College, recently pointed out in a science lecture that the culminating impact of this hypothesis during the 1980's is a large factor in the scientific revolution.
- ²³Harman and Hormann, Op. Cit., p.141
- ²⁴Levy, Op. Cit., p. 26-36
- ²⁵Harman and Hormann, Op. Cit., p. 105
- ²⁶Douglas R. Hofstadter, Metamagical Themas. New York, NY: Basic Books, 1985. passim. Sherry Turkle, Op. Cit., p. 242-3
- ²⁷Hofstadter, Op. Cit., p. 640
- ²⁸Some suggestions as to what intelligence as applied to machines involves show a variety of emphases. Michie and Johnston talk about creativity, fault tolerance, hearing and seeing. Michie and Johnson, The Knowledge Machine. New York, NY: Wm. Morrow, 1985. p.12, 21-3; Holroyd stresses ability to adjust to environment (Op. Cit.); Hofstadter finds the true nature of intelligence in perception (Op. Cit.); coping with complexity interests both Pagels (Op. Cit.) and Richard Restak, The Brain. New York, NY: Bantam Books, 1984.
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- ³⁰Pagels, Op. Cit., p. 321
- ³¹Erich Jantsch, The Self Organizing Universe. New York, NY: Pergamon Press, 1980. p. 240.
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- ³³Anna Lemkow, The Wholeness Principle. Wheaton, IL: The Theosophical Publishing House, 1990. 221
- ³⁴Hardison, Op. Cit., p. 319
- ³⁵Ibid., p. 327ff.
- ³⁶Bertalanffy, Op. Cit., p. 114
- ³⁷Michie and Johnston, Op. Cit., p. 68
- ³⁸Turkle, Op. Cit., p. 299=310
- ³⁹Pagels, Op. Cit., p. 91ff; 202
- ⁴⁰Michie and Johnston, Op. Cit., p. 148
- ⁴¹Ibid., p. 219
- ⁴²Ibid., p. 70

⁴³Moravec, Op. Cit., p. 3

⁴⁴Holroyd, Op. Cit., p. 67

⁴⁵Ibid.

⁴⁶Hardison, Op. Cit., p. 333-40

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RESPONSE TO CLAIRE WALKER

Marilyn Graham

Before addressing the question as to whether AI can be achieved, it is necessary to ask what intelligence is? It has been pointed out that we have no definite answer to this question and that we are not sure how complex a concept we need for representing intelligence in computer systems. We know that those forms of human intelligence which involve precise, certain, deterministic, and rule-based objective knowledge can be emulated by computers. This aspect of computer science falls under the narrow claims made on behalf of AI research that those portions of human mentality which involve the exercise of intelligence and which can be reproduced in working computer programs with complete fidelity can be simulated.

Less apparent is the notion that abstract forms of human intelligence such as risk, courage, love, trust, endurance, inspiration, curiosity, desire, creativity, and even common sense are amenable to the schematization necessary for computer processing. Yet, despite the complex and abstract nature of these forms of intelligence, the wide claim on behalf of AI research is that any aspect of mentality can in principle, be realized in computer systems, or at least explained in computational terms.

Maybe...But what about forms of intelligence which are yet more abstract? I refer to those aspects of intelligence which fall under the broad category of the paranormal. Included among these are precognition and mystical experience. These do not occur in abundance among the general population. Yet, if the wide claim to AI research is to be realized these states of consciousness must be included.

In order to explore the issues to be considered with respect to paranormal intelligence and the wide claim made on behalf of AI Research, it is necessary that I introduce here a personal experience of mine, which happened only once.

I was eighteen years old. I was driving east on a Long Island parkway. It was a bright sunny day. I was thinking how beautiful the world was and how well things were going between myself and my boyfriend (who is now my husband). I know what I was thinking prior to the experience because after it occurred I purposely recalled what was in my mind, hoping that I could make it happen again.

The essence of my being was one of beauty, thankfulness, and love. At once it grew very bright. I squinted. There was a "shape" about four inches outside the windshield to the right of the passenger side. It filled the height of the windshield. There were two curved parallel lines about nine inches apart. There were "prickles" on the southside edges. These were about one-half to three-quarters of an

inch long. The top and bottom of the shape were flat. The light gave it a translucent quality. There was movement inside, but I could not discern any details.

There was One, Good, Harmony. These three aspects were paradoxically distinct, yet One. The experience was "timeless." It was beyond sequential thought. The closest I can come to an explanation is to say that One was not a number, Good was not a particular value and harmony, and Harmony was simply harmony. To get an idea of the totally other quality of this experience, try to imagine Good without thinking of a value component. There were words. Not heard. Not seen. Not male. Not female. The words were "All is well." It was an all peaceful knowing.

At once I grasped the wheel (for balance) and leaned over toward the passenger side to investigate. I remember saying, "What's happening?" It passed.

I want to emphasize the paradoxically simultaneous yet distinctly separate characters of the experience. Though it was not sequential, the limitations of logical thought and language which are sequential force one to explain it sequentially. This means that it is not being explained at all.

Now, here is another strange thing. Because the experience was timeless and not sequential, it appeared not to have happened. This too is a paradox. Because of this I did not mention it to my family, friends, or boyfriend. I was not sure it happened. And at the time I could not express this.

How then can I speak now about the unspeakable? It was not until many years later when I was a student of religious studies at the University of Illinois that the event made some sense. The memory of the event was triggered while I was musing over an account of the mystical experience recorded in William James' The Varieties of Religious Experience. At once I "knew that the "shape" I had seen was a single blade of grass from the grassy strip along Long Island parkways. Somehow, it appeared and was magnified. The top and bottom were flat because the windshield could not accommodate the extent of magnification. The "prickles" were those little prickly things one can feel by running one's thumb along the edge of an ordinary blade of grass. The movement was a glimpse of the internal structure of the blade. I think if the power of magnification had been greater, I would have been able to see it distinctly. Following along this line of thought it is possible that the intensity of the sunlight was also magnified and, therefore, I squinted.

I cannot account for the words.

At this point I ask that you consider the following in light of the experience I have described. You will see that some of what I am about to say could be considered analogous

to the raw data with which an AI researcher might program a humanoid with the expectation of simulating a mystical experience. It will also be apparent that some of what I am about to say is beyond representation and schematization.

1. My paternal grandfather was an Italian monk. There is a church in Binetto, Bari which contains two statues of saints which he made. He left the order after twenty years, married my grandmother, and fathered six children. One of his daughters wanted to be a nun, but in order to do so she would have had to move to another town. This was unacceptable to the family. One of his sisters read "writing on the wall." I do not know the content of these writings.

My great aunt on my mother's side was reputed to have been a folk healer. I do not know whether she healed my psychic means.

I did not know about any of this until years after the experience occurred.

2. I was born in America. I was reared in the Episcopal tradition. My parents joined the church as children because of the wonderful work being done with the poor. My parents were among these. The head priest considered the children as his own family. He was especially fond of my father. Because of this I was given an unusual baptism. It was at night. I was told that this was not done at the time, and he personally played the organ, a task which was generally delegated. I went to church as a child, but went on and off (mostly off) as an adult. Despite this laxity, I was always trying to make sense of what I had been taught about God and religion. This was on an intellectual level, not an emotional or devotional one.

3. I was not, and am not, particularly good or obedient.

4. Despite healthy social adjustment, I have never felt that I belong "in the world," nor to any particular class or group. I see myself as an observer rather than as a participant in the inward sense.

5. At the time of the experience I was an atheist.

6. At the time of the experience the notions that I had about God and religion were traditional. That is to say they were superficial. I knew nothing of mysticism. I did not connect the experience with God, Christ, or religion.

7. I squinted as a result of the bright light. If the light came from an internal source, then why did I squint? Thinking about this, it is not unreasonable to speculate that the light may have been intensified by the same dynamic which magnified the blade of grass. It is possible that there is an unknown subtle faculty within the brain which is capable of perceiving material objects in magnified form. Once triggered the gross sense may, in fact, respond to the

instruction giving the impression that the stimulus derived from an outside source.

8. The words "All is well" were not part of my speech pattern at that time. I would have said something like, "It's O.K." or "It's all right."

9. Why shouldn't I reproduce the experience my thinking the same thoughts which preceded it?

10. It is well known that language is necessary in order to formulate concepts. Yet the experience can only be approximately explained with language. Our language is inadequate to explain the experience, how then can the concepts, and thus the experience be derived from an internal source?

11. I am no longer an atheist.

It appears that part of the confidence with which AI researchers view the prospects of their field with respect to wide claims made on its behalf, stems from the materialistic assumptions they make. One is that the brain is a physical entity that acts according to the laws of biochemistry and is not influenced by any irreducible "soul" or other purely mental, unitary entity that cannot be analyzed. Another is that mind is simply a name for the information-processing of the brain. These assumptions view the brain and/or mind as a self-contained closed system. Precluded is the possibility that mind is an open system. Precluded too is the possibility of the existence of a divine order with which something in some minds--and only under some conditions--relates and interacts.

The mystical experience challenges this point of view.

In conclusion, it appears that the answer to the question of whether AI can be achieved must be yes and no.

It has been established that the narrow claim made on behalf of AI that certain forms of human intelligence can be simulated on a computer is realizable. However, it is dubious whether the wide claim of AI that any and all aspects of mentality are, in principle, amenable to mechanization.

It appears that the realization of the wide claim rests on the following factors: (1) Whether human intelligence is a self-contained closed system and (2) Whether all types of knowledge can be represented symbolically or otherwise is dubious.

If human intelligence is indeed a self-contained closed system, it can be concluded that the mystical experience as well as all paranormal phenomena are self-generated. This being the case, it is theoretically feasible that scientists, having learned all there is to know about human anatomy will be able to simulate any and all forms of mentality. It should be kept in mind, however, that the machine can only

acquire, modify, and reinterpret those forms of knowledge which are given it. Thus, the problem remaining with respect to how mystical insight, or for that matter any intuitive non-rational knowledge which cannot be explained to others who have not experienced it directly can be represented in an artifact.

As AI research matures, those forms of intelligence which can be schematicized and executed mechanically will make us more vividly aware of those forms for which no substitute and no schematization are possible. These aspects of intelligence should surface as those which are uniquely human.

I welcome AI research with the hope that it will lift the lot of human kind by contributing to the elimination of drudgery and ignorance with which the majority are preoccupied. I am less hopeful that the elimination of such evils will result in higher awareness and spirituality.

I know in my heart of hearts that this task falls within the dominion, power, and glory of the Great Systems Operator in the sky.

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THE INTER-RELATEDNESS BETWEEN PARAPSYCHOLOGY AND RELIGION

Michael Perry

Some people make a religion out of psychic phenomena. Others deny them or see them as demonic. We must not force psychic data into predetermined categories. Rather, our spiritual frontiers need to be pushed back to accommodate these data, and to show us a world far more mysterious and exciting than we had thought. Part of the critical assessment of the psychic phenomena lies in distinguishing between the psychic experiences and interpretation of those experiences. The different purposes and usefulness of the Churches' Fellowship for Psychical and Spiritual Studies and of the Academy of Religion and Psychical Research are examined.

I. Let me begin with words and meanings. Frequently we come across words like "psychical," "spiritual," "occult," "religious." I had better say what I mean by each of these terms, or else we shall end up misunderstanding each other. There are no misunderstandings so perverse as those which exist between people who think they share a common language!

We often come across people who confuse the psychic with the spiritual. They tend to assume that, if information comes to a person by psychic means, it is thereby spiritually authenticated. When some one is a channel, for example, there is a temptation to believe that the channeled material cannot be questioned without impiety. But that is just not the case. "Psychical" means "associated with the human psyche," and therefore refers to a natural and human faculty, with all the manifold possibilities of mistake and misinterpretation that human flesh is heir to. In Christian theological terms, the psyche is part of Creation and therefore it is considered within the doctrine of Creation. Human beings are created with a psychic faculty--if there actually is such a thing as a psychic faculty. This last is the question that parapsychologists spend the whole of their professional lives wrestling with. We had better assume it does exist, for the purpose of this paper. Or we will spend all our time getting nowhere.

Some people have a stronger psychic faculty than others. Some are more intuitive by nature, some can pick up all sorts of stray material, some of it from the folk around them or from folk with whom they have a strong emotional bond or to whom they have a strong psychological attachment. Some of it (apparently) they pick up from discarnates who may or may not belong to or have belonged to the human race. Some people seem to have a very weak psychic faculty (I think that I am one of them). But all of us have some psychic faculty and we use it all the time. For example, if I am getting across to you at all in this lecture, it is not only because of the words I am speaking. If it were, then that cynical old definition of a lecture would be true: "A lecture consists of the transfer of information from the notebook of the lecturer to the notebook of the student without

passing through the mind of either." As it is, there is a psychic bond between a good lecturer and his audience, so that something additional to the words of his lecture gets across to the folk who are listening to it.

So, when I use the word "psychic," I refer to a faculty which human beings possess by the very fact of their being human. "Spiritual," on the other hand, refers to something very different. In Christian terms, spirit or pneuma points us to divinity rather than to humanity, and it is the gift of God who is, supremely, Spirit. The different religions differ in their assessment of the relationship between divinity and humanity. Christianity has a peculiarly subtle doctrine of Incarnation. Christians believe that divinity and humanity, spiritual and psychic, were fused in Jesus of Nazareth, in such a way that he is both perfect God and perfect man. We also believe that human beings can share in that divinity of Jesus and thereby become spiritual as well as psychic.

Other religions have other explanations of the links (and the differences) between psychic and spiritual; but let us stay with the idea that when we speak of the "spiritual," we are talking about our desire to transcend the purely natural and human boundaries--to push back the frontiers, the spiritual frontiers--to transcend human and material understandings, even human and material mortality, and to partake of the nature of eternity. That's the "spiritual." It is the province of "religion" to take that human urge towards transcending of the merely human and how it can be realized. The Christian religion, for instance, says that this human desire can only be granted by the divine will and only under certain circumstances.

Religion is a dangerous thing. It can take the spiritual and try to systematize it; it can try to constrict it within the boundaries of doctrines and dogmas; it can attempt to build a cage around a rainbow. Then, instead of being something which unites humans in a free quest for spiritual reality, religion becomes something which divides humans from one another, and enslaves them. It is that tendency which has given "religion" a bad press--and (sadly) rightly so. "We have been dosing people with religion," said Frederick Denison Maurice more than a century ago, "instead of introducing them to the living God." Religion tends towards organization; spirituality is free.

These days, many people are turning away from religion in a search for spirituality. There is nothing particularly new in a feeling of disenchantment with institutionalized religion. Those of you who know your Beethoven will remember how, in his Missa Solemnis, when he is setting the words of the Creed to music, he compresses the words "I believe in one holy, catholic, and apostolic Church" into two hasty bars of the tenor line; but when he comes to "and the life of the world to come" (et vitam venturi Saeculi), he has to take sixteen pages of soloists, full chorus, and everything

the orchestra can give, before he has said all he wants to say about our human spiritual destiny.

There are dangers in jettisoning religion altogether, in favor of spirituality, and if I wanted to, I could wax very eloquent on them. You might expect me to do so. An Archdeacon, after all (and I know you do not have Archdeacons in America, but in England an Archdeacon) is supposed to be the quintessence of religious establishmentarianism. I will not put that record onto the turntable this evening, except to say that we cannot do without religion, but we have to be very careful indeed what we do with religion, lest we find that we have made our religion into our spirituality and then found that our spirituality turns to dust because it has been driven out by an excess of religion. The London Times carried an article this Good Friday (29 March, 1991) by the Chief Rabbi elect, Jonathan Sacks. It is worth quoting.

He pointed out, as the followers of Judaism are rightly wont to do, some of the evils that have been done in the name of one religion to the followers of another.

Innocent people are still being killed in the name of God. ...Northern Ireland, Lebanon, and the Gulf war testify to the power of religion to fuel conflict rather than reconciliation. Half a century of inter-faith dialogue has not yet brought a world of religious tolerance. Might there be...something that would teach future generations a road to peace?

The Rabbi believes so, and he tells us how, on Passover night, Jewish families deliberately spill wine from their glasses, a drop for every one of the Plagues of Europe. Why?

The drops of wine represent the tears we shed for the Egyptians. To be sure, the Bible portrays ancient Egypt as a tyranny that first enclosed, then attempted to eliminate, the Israelites. The plagues were part of the liberation of an afflicted people. But the plagues had victims. And Jewish tradition ordains that we should not forget the victims, even though they were the enemy and the plagues were sent by God. We must shed a tear for them at the very moment of celebrating our freedom.

The Rabbi commends this ritual of taking a glass of wine and spilling drops of it as symbolic tears for the victims of our victories. As a child, he learned that though he suffered pains because of his faith, he had no right to inflict pain on others because of their faith. "Those who have eaten the bread of affliction must give others bread, not affliction." Those words come home to us in the aftermath of a decisive Gulf victory which has inflicted terrible suffering on the citizens of a nation which

may have "started it all," but who are still human beings, and still mourn.

So, do not confuse the psychic with the spiritual, or the spiritual with the merely religious. And do not use the word "occult" unless you use it accurately. "Occult" means "hidden" and refers to a type of religious understanding which believes that it possesses truths about the world and about what lies behind the visible universe--truths which are hidden from ordinary people and are only made known to the specially favored cognoscenti. Spiritualists are not occultists, any more than parapsychologists are. Some occultists use (or purport to use) psychic powers in the course of the practice of their religion, but the words "occult" and "Psychic" describe entirely different areas of activity, and should not be confused. Unfortunately, there are some fundamentalistic Christian groups which tar both sets of people with the same brush. Do not join them--please!

So, after all that, what about the inter-relationship between parapsychology and religion?

It would, I suppose, be possible to go back to the very beginnings of primitive religion, and discuss the relationship between the psychic and the numinous in the early understanding of the human race. For tonight's purpose, I propose something a bit less ambitious. I want to contrast what I regard as two current misunderstandings of the relation between psychic facts and religious interpretations and then go on to sketch what I hope will be recognized as a more excellent way.

My first example is classic spiritualism. This takes the raw data of psychic experience and makes them the basis of its whole religious understanding. It is not surprising, because prima facie those data are mind-boggling, and they seem to provide factual and incontrovertible evidence for the kind of things that religion asks us to believe "on faith." The phenomena themselves can be traced as far back as human records go, but the rise of Spiritualism as a religion is generally dated to the mid-nineteenth century, after the Hydesville happenings of 1848.

Scientific psychical research came a generation later, in the mid-1880's. Why the gap? And why did things happen in that order?

Partly, of course, it was because, between those dates of 1849 and 1882, Science (with a capital S) in the person of Erasmus Darwin had been so successful in showing the creation stories of the Christian and Jewish Bible to be poetry rather than historical fact. By the 1880's religious believers had not yet had time to assess the real impact of Darwinian ideas, but some of them thought that psychic phenomena could prove the truth of religious assertions, and give the lie to people who were making atheist propaganda out of the new evolutionary ideas.

Sadly, it proved not to be as simple as that. When the world of the psychic was subjected to the methods of scientific inquiry, "assured results" never materialized--unless, with the skeptics, you believe that parapsychology has provided nothing but negative results and therefore disproved both the psychic and the religious viewpoints. The trouble was, in words which I have long taken as a personal motto, "experience is sacred, interpretation free." Alternative explanations are the bane of parapsychological theorists. To take a few obvious examples: Is a medium in touch with discarnate human beings, or is she only in touch with memories in the mind of the incarnate human being who is sitting across the room from her and asking for messages? Can we prove reincarnation by hypnotic regression to former lifetimes? Or does this only show what remarkable imaginative and histrionic powers the human mind has and what it can make out of the material it has read, perhaps decades ago, and of which the conscious mind retains no memory? Or, if you cannot accept the cryptomnesiac hypothesis in relation to past-life experiences, what of telepathic contact with a departed entity who is temporarily taking over the personality of the hypnotized sitter and pretending to be one of the sitter's previous incarnations? And so we could go on. You will be as familiar as I am with the whole range of alternative hypotheses for very ostensibly paranormal happening.

Therein lies the difficulty for spiritualism. What started off as a means of proving the claims of religion about the reality of a future life, without the peradventure of a doubt, ends up in a cloud of supposition and counter-supposition, of explanation and counter-explanation. And, truth to tell, the motto of my own organization--the Churches' Fellowship for Psychical and Spiritual Studies--falls under the same condemnation. "To faith, add knowledge," it goes. (It is a rather selective quotation from 2 Peter 1:5, which, in the King James Version, reads "add to your faith virtue; and to virtue, knowledge.") It is not knowledge that parapsychology adds to religion. It is a particular interpretation of disputed experiences.

Spiritualism demands a particular reading of the evidence as its whole *raison d'etre*. If that fails, so does the whole edifice of spiritualism. Christians are not so disposed. We believe in communion, but communication is not a necessary part of that belief. If it were proved that every phenomenon of Spiritualism were untrue, then Christians would hold (as a lot of them do at present hold) that death is most certainly not the end, but the barrier of death is like a one-way mirror. Those on the other side can see what we are doing, and know what we are thinking. But we do not have reciprocal privileges. We cannot receive messages from them, but have to accept the doctrine of the world to come on trust.

Spiritualists, then, hold one possible view of the relationship of parapsychology to religion. A diametrically

opposite view is held by many fundamentalistic, charismatic, or evangelical Christians. They are convinced that the whole parapsychological field is of the devil. The Prince of Evil is using it to lure us into wrong beliefs, because if we die in error we shall end up in hell with him instead of going to heaven with Jesus. The fact that the Bible is shot through with accounts which today we would call parapsychological events does not worry them. According to the doctrine of dispensationalism, it was right for such things to occur in Biblical times, and especially in connection with the Incarnation; but we are living in a different era in which these events are not necessary and therefore God is causing no more of them to happen. Satan has no such scruples, and is constantly active in this way.

There, then, are two samples of understanding the relationship between parapsychology and religion--the Spiritualist and the fundamentalist. The first of these places religion at the mercy of a particular interpretation of the data, and the second places the data at the mercy of a particular religious stance. Is there any better way?

3. The only relationship I find tolerable for the interplay of my parapsychological interests and my religious convictions is the way of critical discernment. "Experience is sacred, interpretation is free." That means that I must first examine the human experience of the paranormal, and see how it presents itself to those who come across it. It is, at this stage, an entirely Secular quest, like the quest to find out the truth about any other area of science. Even so, the researcher will soon find that the world is a much stranger place than he had previously imagined. That cannot help but push back his spiritual frontiers, and--similarly--his perception of what kinds of things are possible and what things are impossible cannot but change as he looks at the parapsychological data.

However, the uncommitted stance of the Society for Psychological Research, or of the many departments of parapsychology in American universities, is essential. By "uncommitted" I mean what these optimistic pioneers of the nineteenth century SPR meant by their phrase "without prejudice or prepossession." I mean committed to the search for the facts, but I mean uncommitted--at this stage--to any specific interpretation of them. I will look out for misperception, misinterpretation, and even downright fraud; but I will look as carefully at the data as I can, in order to see whether they can all be explained in terms of the psychological and the normal, or whether they force me into hypotheses which involve the parapsychological and paranormal.

This is because I must believe that if the God in whom I trust is not only the creator God but also the God of truth, then every attempt to find out the truth about the world which he has created is in essence a spiritual quest, and there can be no fudging in a search for the truth, any more than the chemist or the physicist is allowed to fudge his results in order to make them the better fit the hypo-

thesis he is trying to establish. Truth is a hard task master, but only the person who is in bondage to the search for truth will ever find the freedom of those who can ultimately rejoice in the knowledge of the truth.

And in that quest there cannot be any "no entrance" signs. Admittedly, I also believe that this world is a battleground between God and the forces opposed to him, so I will not go into it unprotected. For all I know, there may be spiritual dangers ahead, where those who are not under the Protection" can come a nasty cropper. So I will be wary. That underlines the need for spiritual recollectedness--for the Christian, that involves living as consciously and constantly as possible in the companionship of the incarnate God, who was known during his life on earth as Jesus of Nazareth. To have our hand in his is better than light, and safer than a known way, even when (especially when!) we are travelling in the strange ways of parapsychological investigation.

But you will not spend long in even the secular pursuit of parapsychology before you realize that phrase "without" prejudice or prepossession is far too optimistic an expression. You cannot help passing from experience to interpretation, and immediately you are in a quagmire of conflicting explanations. Immediately we are in trouble. How do we judge (that is, by what criteria do we judge) which of the whole range of theoretically or philosophically possible explanations is the most convincing? What considerations move us to decide whether successful mediumship is due to the medium's fishing for clues from the sitter, or whether it is due to super-ESP, or whether it has to be explained by genuine communication from a discarnate entity? How do we judge whether the near-death experience is a real glimpse of the world of the life to come, or whether instead we have to take it as no more than the paroxysm of the electro-mechanical brain at its last gasp? How do we judge whether shamanism (or the prophecy of the Biblical writers) is "simply" a strange alternative state of consciousness to be added to our knowledge of humanity's psychological repertoire, or whether it is a real means of contact with a world of spirits? What leads us to decide whether "Jaysee" Knight's Ramtha is an exalted spirit with important messages for the whole human race rather than an example of how somebody can fool both herself and others into taking a multiple personality more seriously than it warrants? How do we decide whether or not to believe that A Course in Miracles contains new words from Jesus, formerly of Nazareth?

The upshot is that, since there can be no certain explanation of any paranormal datum, the parapsychologist who opts for one interpretation rather than half-a-dozen possibilities, is as much a man of "faith" as the religious believers. He has moved from the experience to the interpretations; and thereby he is in the sphere of subjective explanation rather than objective fact.

We have, therefore, inescapably, to ask what interplay there is between what we discover as parapsychologists and what we believe about the nature of reality. That is a religious question, and I shall devote the rest of this article to trying to tease it out.

4. We are talking about parapsychological data, and the explanation we give of them. An "explanation" has to be something that satisfies us inwardly, and enables us to set the otherwise puzzling data into a wider term of reference, so that we say, "Ah, yes; now I see why things are the way they are." Not all of us are satisfied in the same kind of way. Some of us are mathematically inclined and would love to find a single equation comparable to Einstein's $e=mc^2$, or some great unified field theory which would encompass the whole of reality and from which we could deduce every known law of the physical universe. Others of us say that nothing could be more concise and satisfactory as an explanation of the world than a three letter word; G-O-D, for example.

An example might help. Let us take a particular paranormal event and look at some possible explanations of it. The event I am going to take is in the Bible: St. John's Gospel, Chapter 12: verses 27-29. It is a useful example because the writer of St. John's Gospel has already done half our work for us. He has conveniently provided us, not only with narrative, but with a series of possible explanations of it.

Jesus has been talking to Philip and Andrew, but suddenly changes tack and begins to speak to God. "Father," he says, "glorify your name."

A voice came from heaven: "I have glorified it, and I will glorify it again." The crowd standing by said it was thunder they heard, while others said, "An Angel has spoken to him." Jesus replied, "This voice spoke for your sake, not mine."

This is an account of an unusual incident--a miracle, if you like to call it that. Immediately it has happened, there are three possible explanations, each of which satisfies a different kind of person. We can call these the rationalist, the parapsychologist, and the religious explanations.

The rationalist fits his understanding into categories he already knows and understands: "It was thunder." He believes that a natural event was misinterpreted in religious categories.

The parapsychologist cannot explain the phenomenon, but he cannot deny that something has happened, so he takes it at its face value and may even give a non-explanation of it in order to make the incredible sound more creditable. "An angel spoke to him." Yes, there were words and they made an intelligible message. There must have been something objective to it. We cannot see how it happened, so we will use a

term to explain it--"angel"--which leaves things open, but does not really explain. Parapsychology is full of terms like that. They do not really explain, but they allow us to speak the otherwise unspeakable: "Telepathy," "ectoplasm," "morphic resonance," "synchronicity." They are no more than labels put on to exhibit in the museum of curiosities, but at least they allow us to put similar exhibits in close proximity and one day we may (if we are lucky) find an explanation which really explains instead of merely describing.

The third explanation, the religious one, puts the whole thing into personalistic and purposive terms. Jesus (and the Evangelist who reports the incident) clearly accepts it as an occasion on which God spoke and was heard by men.

These are not three mutually exclusive explanations. If there is a God, then it is possible that he may use angels to carry his messages. If there is a God, and if he is the creator God, then why should not he use parts of his creation--like a clap of thunder--for the same purpose? But at any rate, the story from St. John's Gospel shows how as single incident can be explained to the satisfaction of different kinds of people in very different ways. Each explanation starts from different premises and takes quite different backgrounds of thought for granted.

The problem is a familiar one when we consider the inter-relationship of religion and parapsychology. All these paranormal events; do we explain them in the CSICOP way by seeing all of them as the results of misinterpretation or fraud? Or do we think up parapsychological categories and hope that some wider understanding may eventually dawn, and we shall then be able to comprehend the world as an amalgam of the normal and the paranormal? Or do we take the religious way out and say "God knows what is going on, and he is not telling us yet."

Or do we in fact have to say that all three explanations may be possible, and even that they may all be possible at the same time?

It is our duty as good parapsychologists, first, to look for normal explanations of any apparently paranormal event: the "it was a clap of thunder" explanation of that incident we looked at from St. John's Gospel, and only to accept a paranormal explanation if all possibilities of normal explanation have been tried and have been exhausted. It is also our duty as good parapsychologists to look for theories by which these strange happenings can be integrated within our overall picture of the world, the "it was an angel" approach, trying to fit the phenomena into categories to enhance the possibility of our coming to an understanding of them. But it is my duty as a Christian parapsychologist to say that the ultimate explanation of the universe is to be sought only in the mind of God, and that what the scientists are doing (and the parapsychologists among them) is to explore into the divine mind and attempt to uncover its

mysteries. That is an awesome task, and it is well that all scientists should approach their study of the Universe in a spirit of reverence for the unseen God who lies behind everything that we examine in the world he has made and in which he has set us.

Where does this place you as members of the Academy of Religion and Psychical Research? And where does it place me as a member of the Churches' Fellowship for Psychical and Spiritual Studies?

The Academy has a wide remit: it can consider the whole of religion, and the relationship of parapsychology to all of it. The Fellowship limits itself to the Christian Churches; indeed, although it has an associate membership open to anybody, its voting members have either to be practicing members of one of the Christian Churches or else to sign a declaration that they personally acknowledge Jesus Christ as Lord and Saviour of the world.

The difference between the two bodies probably reflects the difference between American and British religious culture. The Churches' Fellowship is acutely conscious of the suspicion which practically every branch of the Christian Church has for centuries felt toward the whole area of the psychic. But we believe that the psychic faculty exists and that it needs, as does every human faculty, to be hallowed and directed aright to the glory of God and the good of humanity. We believe we are called to open the eyes and enlighten the understanding of the churches in Britain to that fact, and we believe we can only do it if we are trusted as people whose Christian theology is sound. It is an uphill struggle, and the reasons behind it are not fully understood by the whole of our membership. But it is something to which the leadership of the Fellowship is committed, and as a senior ecclesiastic in the Church of England, I would not hold office in the Fellowship if that were not to be the case.

You will probably tell me that in America, where religion is more a matter of private enterprise and less a matter of public policy than it is in England, the kind of stance to which the Churches' Fellowship is committed cuts very little ice, and what is more important is that the religious community should realize that the parapsychological enterprise is academically respectable. That means you have to be open to the insights of all religions without making value-judgments about any of them; your interest is in religion as a total phenomenon. The Churches' Fellowship believes that it can best serve the cause of truth by helping the institutional churches see that the psychic faculty can be exercised in a responsibly Christian manner. ARPR, I presume, believes that the cause of truth is served best by scholarly impartiality.

The danger is that each body will belittle the other. We are in danger of saying that SFFI and ARPR are dangerously syncretistic and that Christians had better beware if they join these bodies because they have no clear doctrinal

basis. You will be in danger of saying that we are a blinkered little Christian body which is unable to see truth when it is staring us in the face because we have already decided that if anything does not agree with the Christian dogma we will have nothing of it.

Let us not do that! How much better to realize that our different stances arise from our different circumstances, and that there is need for both kinds of organization.

We are concerned with the domestic problems of a Church which finds it hard to come to terms with the facts of psychism. You have the vision of a wider ecumenism and are concerned with the interfaith dimension of the implications of parapsychology for religion. Both are essential if the inter-relation of psychology and religion is to be mutually fruitful.

All I would urge is that we always remember that we are human beings as well as academics. However wide our academic interests, we can not as human beings find salvation in religion in general, but only in the pursuit of one particular religion to which we have given ourselves in totality. We can draw water from many wells but for our own souls' health, each one of us needs in the end (if I may change the metaphor) to be rooted in the wholesome ground of his or her individual, particular, and unique faith. That rooting involves the exercise of what I like to call the human trinity the trinity of emotion, mind, and will. If we are intellectually convinced without being emotionally stirred we cannot translate the understanding of our religion into practice; and if we have a religion which is all knowing and no doing, we fall into the condemnation of St. James (1,22) who wrote that those who were hearers rather than doers simply deceived their own selves. I am persuaded that better things are true of you, and I rejoice in the links which exist between ARPR and SFFI, and the Churches' Fellowship. Long may they last and strong may they remain.

The Venerable Michael Perry is Archdeacon and sub-Dean of Durham Cathedral and Chairman of the Churches' Fellowship for Psychical and Spiritual Studies. His address is 7 The College, Durham DH1 3EQ, England.

RESPONSE TO MICHAEL PERRY

Louis Richard Batzler

Michael Perry has given us an inspiring and helpful perspective on some age-old questions of science and religion, truth and falsehood, faith and reason, facts and the interpretation of facts. He has presented clearly some of the basic problems and challenges that these questions raise and concludes with a comment that we might well consider as a text or a priority for our lives, e.g., "All I would urge is that we always remember that we are human beings as well as academics." In this age of science and scientism, high technology and artificial intelligence, it is imperative that we be mindful and respectful of our humanity and the kinship of all life.

In good scholastic tradition Michael Perry defines his terms: psychic, occult, religious, spiritual; and he elaborates on them briefly, thus enabling us to know where he is coming from and the parameters of his presentation. Often in academic circles, as well as in the world in general, persons fail to define and clarify terms, thus confusing and clouding the issues and hindering resolution. Critical thinking is just as essential in matters of faith as in matters of secular concerns.

In discussing spiritualism and religious fundamentalism, Michael Perry presents two viewpoints of the relationship of parapsychology and religion. He notes the problems that arise from the postures and approaches of these two belief systems. Spiritualism places religion at the mercy of a particular interpretation of the data, and fundamentalism places the data at the mercy of a particular religious stance.

Michael Perry then explains that the only relationship he finds tolerable for the interplay of his parapsychological interests and his religious convictions is critical discernment. "Experience is sacred; interpretation is free." This means that one needs to be committed to the search for the facts, but uncommitted (without prejudice or prepossession) to any specific interpretation of the facts. Noncommitment to a specific interpretation, however, does not mean that one merely analyzes facts so that no conclusions will be drawn or no truth revealed. As a Christian clergyman, Michael Perry affirms that "the God in whom I trust is not only the creator God but also the God of truth," and, therefore, every attempt to find out the truth about the world which God has created is in essence a spiritual quest and there can be no fudging in a search for the truth. This postulate is one that I think most of us in the Academy affirm.

However, more is needed. He states, "But you will not spend long in even the secular pursuit of parapsychology before you realize the phrase "without prejudice or prepos-

session" is far too optimistic an expression. You cannot help passing from experience to interpretation, and immediately you are in a quagmire of conflicting explanations. Immediately we are in trouble. How do we judge (that is, by what criteria do we judge) which of a whole range of theoretically or philosophically possible explanations is the most convincing?

After raising a number of questions concerning the difficulty of obtaining objectivity and certainty about paranormal phenomena he notes, "The upshot is that, since there can be no certain explanation of any paranormal datum, the parapsychologist who opts for one interpretation rather than half-a-dozen possible others, is as much a man of "faith" as the religious believer. He has moved from the experience to the interpretation; and thereby he is in the sphere of subjective explanation rather than objective fact.

We have, therefore, inescapably, to ask what interplay there is between what we discover as parapsychologists and what we believe about the nature of reality.

This, he notes is a religious question. Michael Perry then provides an example of interpretative possibilities from the Gospel of John, 12:27-29. He describes three interpretations--rationalist, paranormal, and religious--and states that, if there is a God, the three explanations need not be mutually exclusive. This is an important observation in terms of approaches to truth within the context of faith. In this connection he makes clear, however, that it is his duty as a Christian parapsychologist to say that the ultimate explanation of the universe is to be sought only in the mind of God, and that what the scientists are doing, including the parapsychologists, is to explore into the divine mind and attempt to discover its mysteries. Those not of the Christian persuasion or not of any religious persuasion would most likely disagree with this stance.

This affirmation, I believe, is the heart of his presentation. It is also one that resonates to my approach to truth and reality. Therefore, I would like to elaborate briefly, and somewhat poetically, on this affirmation for my concluding remarks. I believe that these final thoughts represent what we are about as academicians searching for truth within the context of religious faith.

Truth, in whatever form, is many splendored. No one knows or can reflect all of the splendor. No one knows everything about anything. Like the heavenly galaxies, we see some of the stars, but not all. Like the ever changing waves of the sea, we glance, catch a glimpse and then they are gone. So it is with the path to truth. We perceive particular partialities. hardly ever, except maybe in a moment of mystical union, do we know this whole, the pure truth.

Therefore, the search is a process of highest probabilities; that is, the acceptance and application of that

reality which is right, reasonable, respectable and responsible for us at a particular time and place in our life's journey. To seek truth in this way fosters freedom, banishes bigotry, allows room for growth of self and others, admits the ranges of changes in life, acknowledges as frequently as fantasy admonishes us not to be resolute about the absolute, and nurtures the human spirit.

Though truth is beauty, it often appears in dark disguises and sometimes in subtle surprises. Truth comes to us in work or play, in a lifetime or in a moment, in a cathedral or in a tent, or in a sinner's wrong. Truth may bear its message in pot or in a mess of pottage, in the prose of a rose or in a gory story, in laughter and tears, in faith and fears, in grief and pain, in sunshine and rain. Truth comes to us through mind and heart, at the end or at the start of life, in war and peace, in retention or release, in prayer and when we care, share, or dare. Truth is timeless and timely and is seen in the slave and the free, above and below, and in the slow flow of the ages of ice.

We prepare ourselves for the journey toward truth by wearing the garb of gratitude and dress of discipline, carrying the lamp of love, and compass of faith and the staff of hope. We acknowledge the paradoxical randomness, of stability and spontaneity, of the apart-fromness (uniqueness) and the a-part-ofness (commonality) of all creation.

We are grateful to Michael Perry for providing us inspiration, insights, and perspectives for our tasks in the Academy and our journey through life. He has helped us move toward realizing in our lives those wise words, "You shall know the truth and the truth shall make you free."

The Rev. Louis Richard Batzler is an author, lecturer, and leader of seminars in the fields of holistic health and thanatology and he is also President of the Academy of Religion and Psychical Research. His address is 917 Colington Dr., Kill Devil Hills, NC 27948.

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